

Trends in Alaska and World Salmon Markets

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Outline of this Presentation

1. Trends in salmon markets
 - Catches
 - Production
 - End-markets
 - Prices
 - Value
 - Permit prices
 - World salmon supply
 - Farmed salmon prices
2. Factors affecting Alaska salmon markets
3. Future outlook for Alaska salmon markets
4. Data sources

Trends in Alaska Salmon Markets: Selected Important Trends . . .

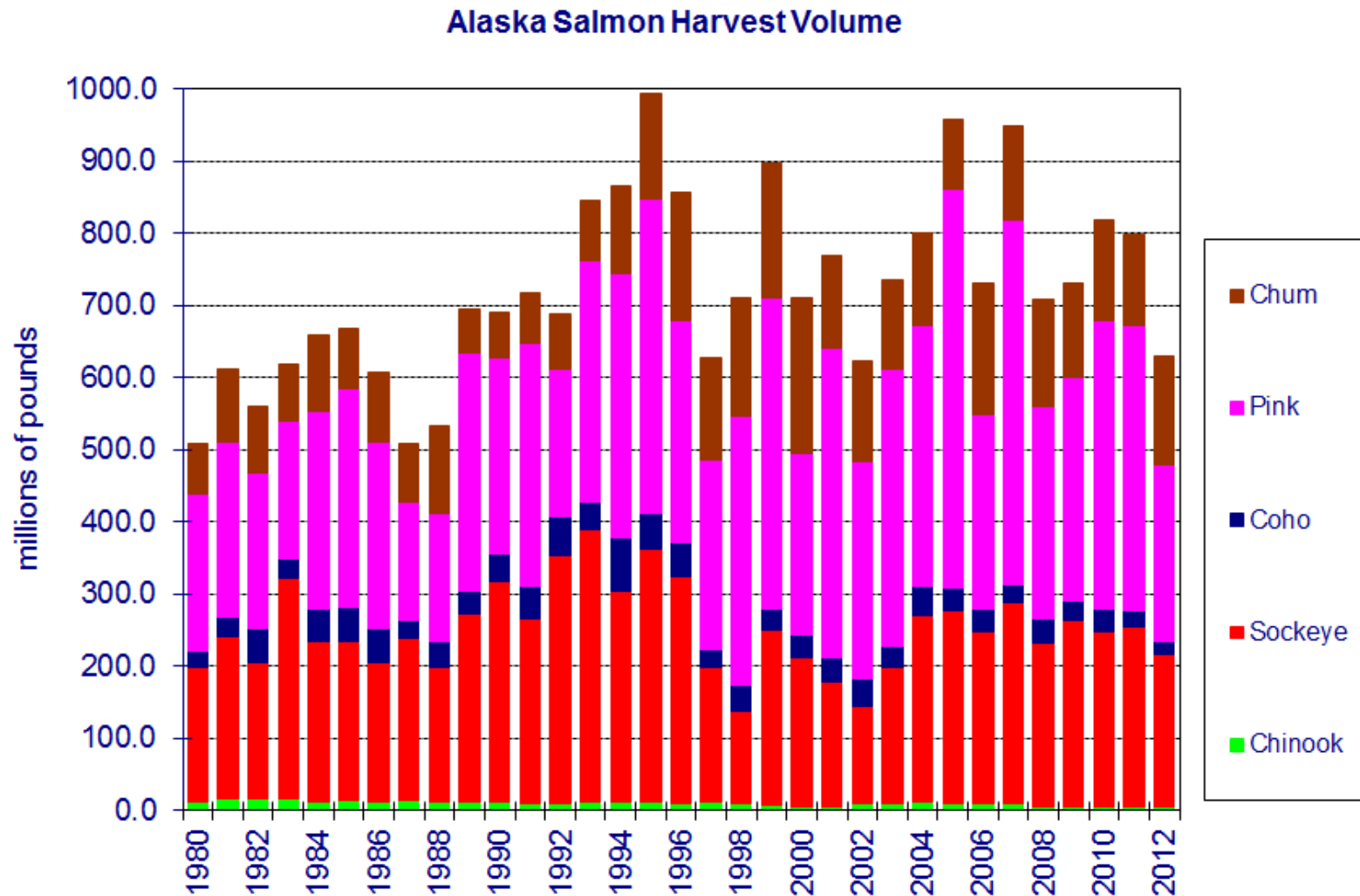
- After falling drastically in the 1990s, Alaska salmon prices and value have rebounded dramatically since 2002
 - Ex-vessel and wholesale prices have risen dramatically (but fell slightly in 2012)
 - Ex-vessel and wholesale value have risen dramatically since 2002
 - Both fishermen and processors have shared in the increase in prices and value
- US markets for frozen salmon have diversified:
 - Less is being exported to Japan
 - More is being exported to the EU
 - More is being exported to China
 - (Most of the exports to China are reprocessed into value-added products which are re-exported to US and EU markets)
 - More is being consumed in US domestic markets
- An increasing share of pink salmon is being frozen rather than canned

Trends in World Salmon Markets: Selected Important Trends . . .

- Total world salmon supply has expanded dramatically over the past three decades
- Farmed Atlantic salmon now accounts for 2/3 of world salmon supply
- Global demand for salmon has expanded dramatically
- Global markets have diversified dramatically
 - Salmon farmers have developed major new markets in Russia, Eastern Europe, Brazil, etc.
- Global salmon demand has been growing strongly, helping to pull prices up
- From 2008-2010, major disease problems in Chile lowered production—leading to a spike in prices
- Since 2010 Chilean production has recovered strongly—causing prices to fall sharply in 2011 and the first part of 2012
- Over the past six months farmed prices have risen sharply
- Some but not all markets for Alaska frozen and fresh salmon have been affected by farmed salmon pricing
 - Those markets which compete most directly with farmed salmon:
 - Frozen H&G, Frozen fillets, Fresh

TRENDS IN ALASKA SALMON HARVESTS

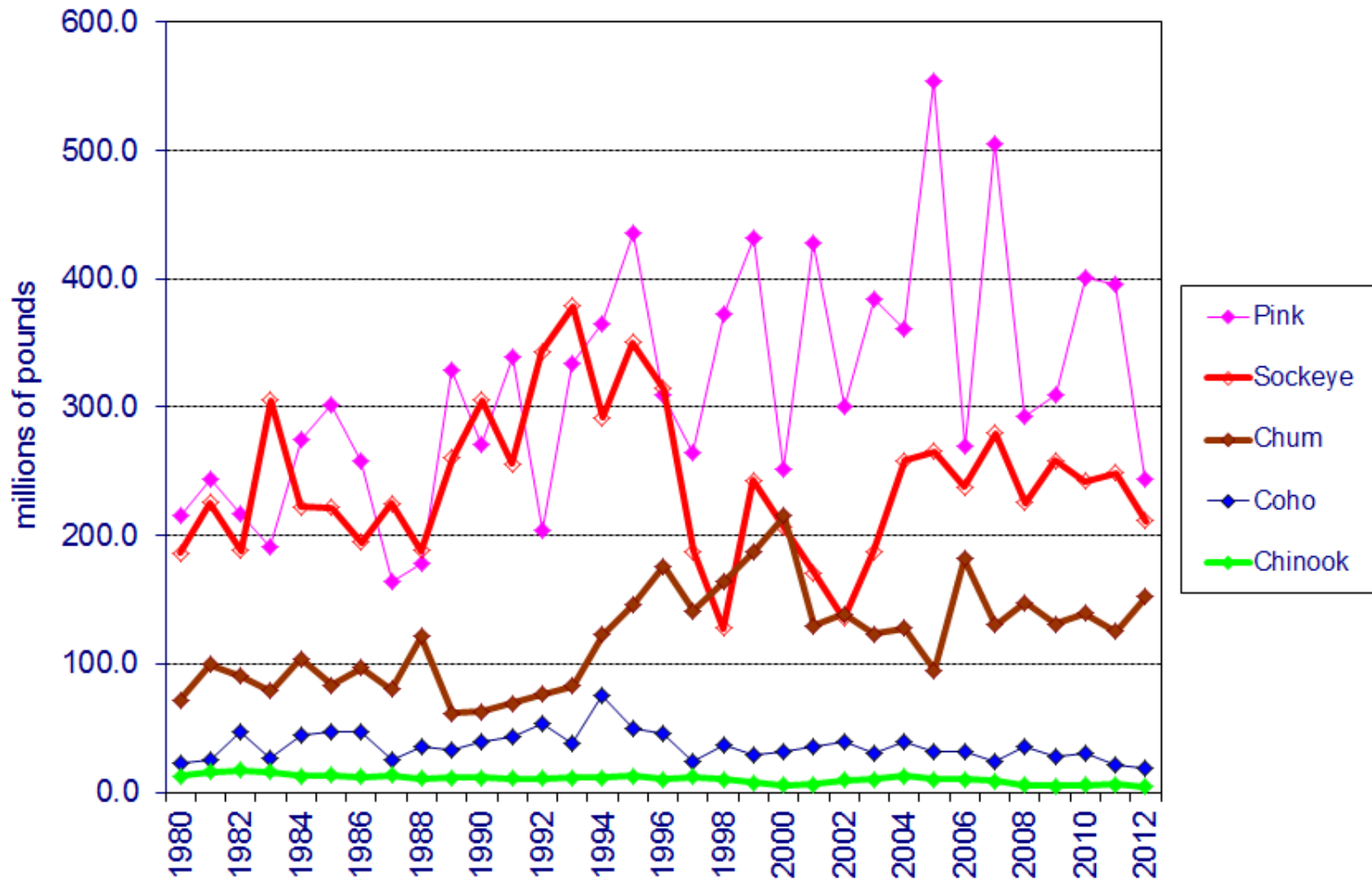
Sockeye, pink and chum account for most of Alaska's salmon harvest volume and value. In this presentation I focus on markets for these three species. Alaska salmon harvests have generally been strong over the past decade. Note however that the 2012 harvest volume was the lowest since 1998—due to lower sockeye and pink harvests.



Harvest trends differ by species:

- * High but widely fluctuating pink harvests—fell sharply in 2012
- * Sockeye harvests up from 1998-2003 levels—but fell in 2012
- * Chum harvests fairly strong and consistent

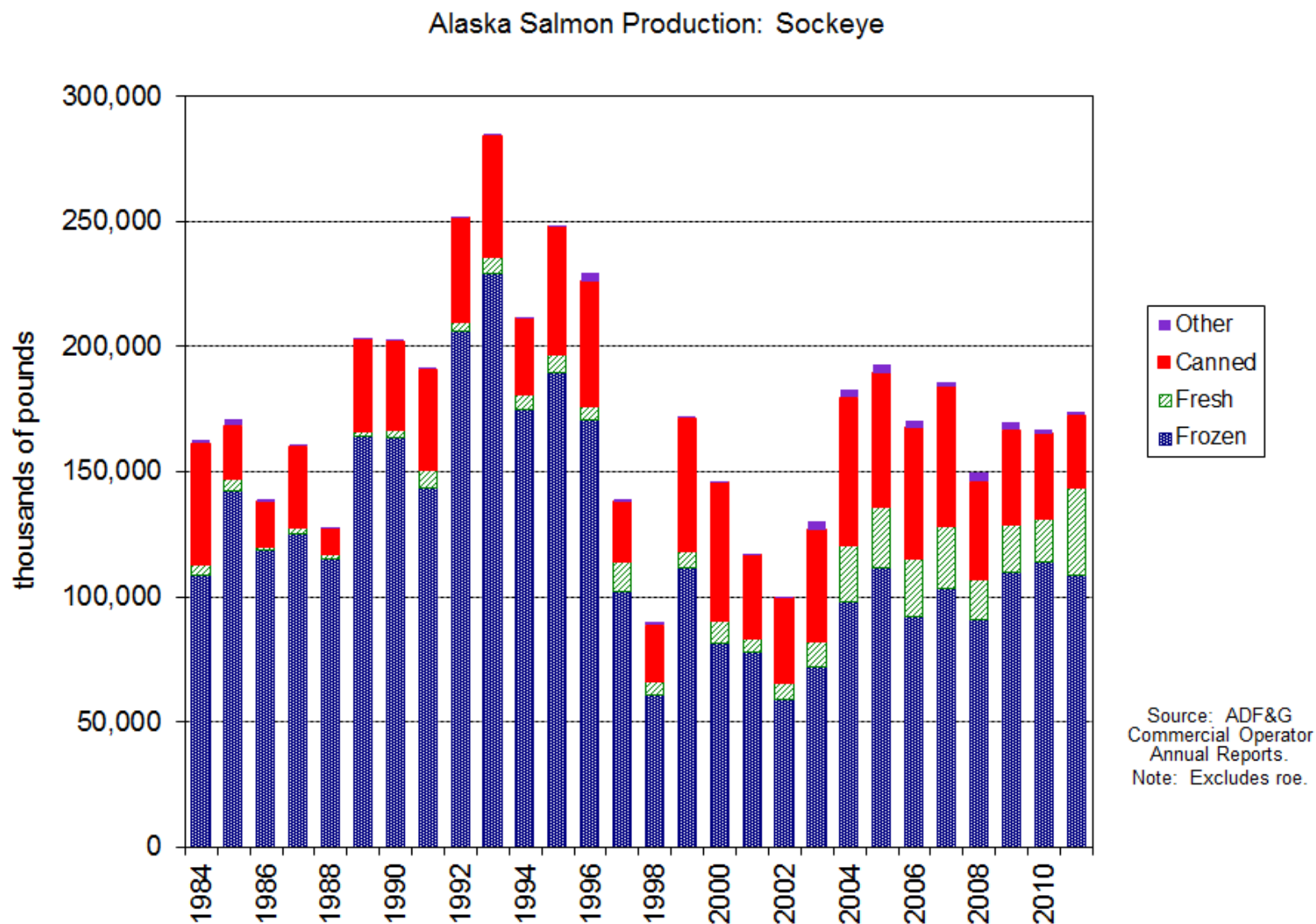
Alaska Salmon Harvest Volume, by Species



TRENDS IN ALASKA SALMON PRODUCTION: PRODUCTS PRODUCED FROM ALASKA SALMON

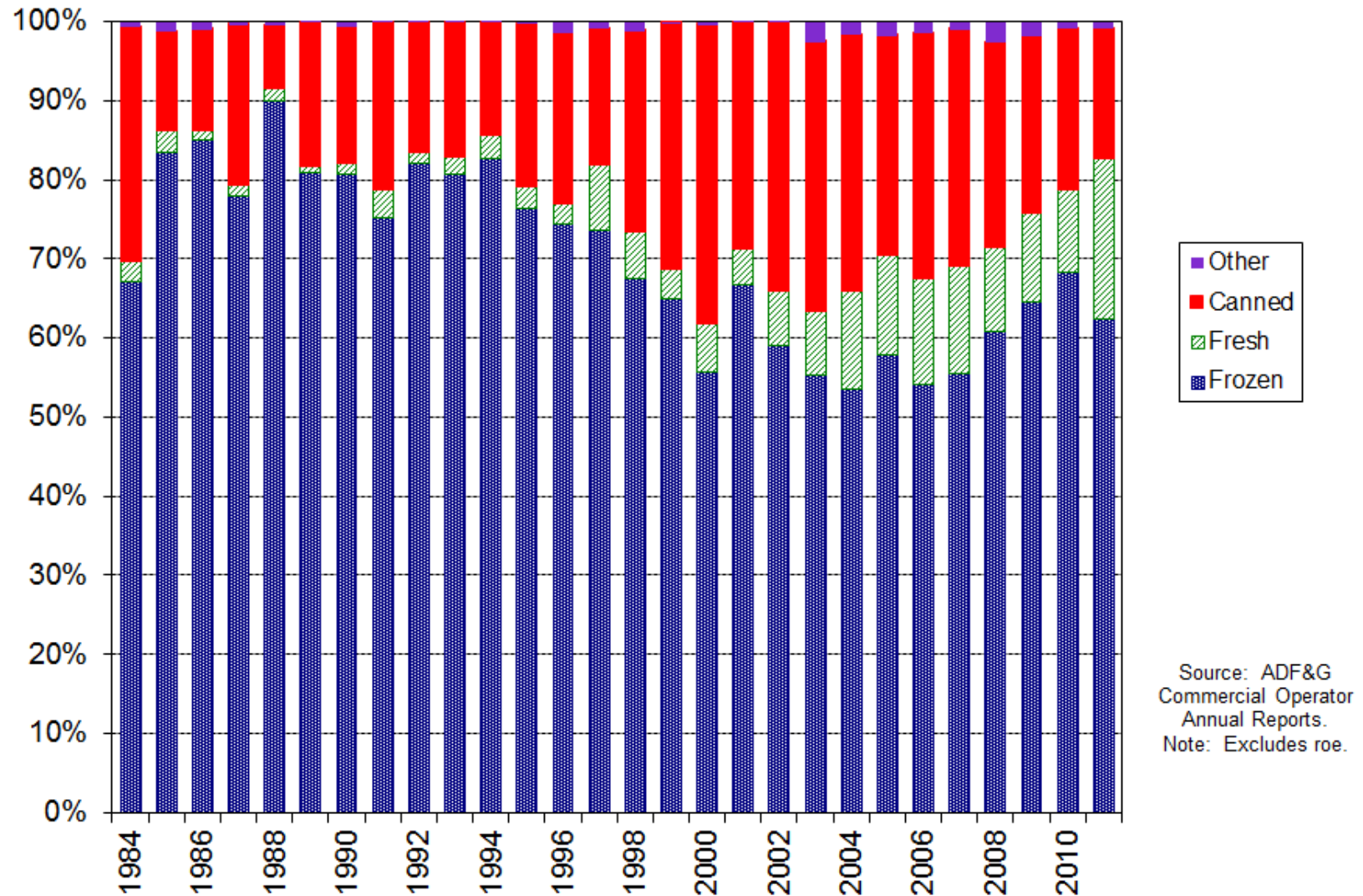
Note: These graphs are based on Commercial Operator Annual Report (COAR) data which are only available through 2011.

Frozen, canned and fresh salmon are all important sockeye salmon products.

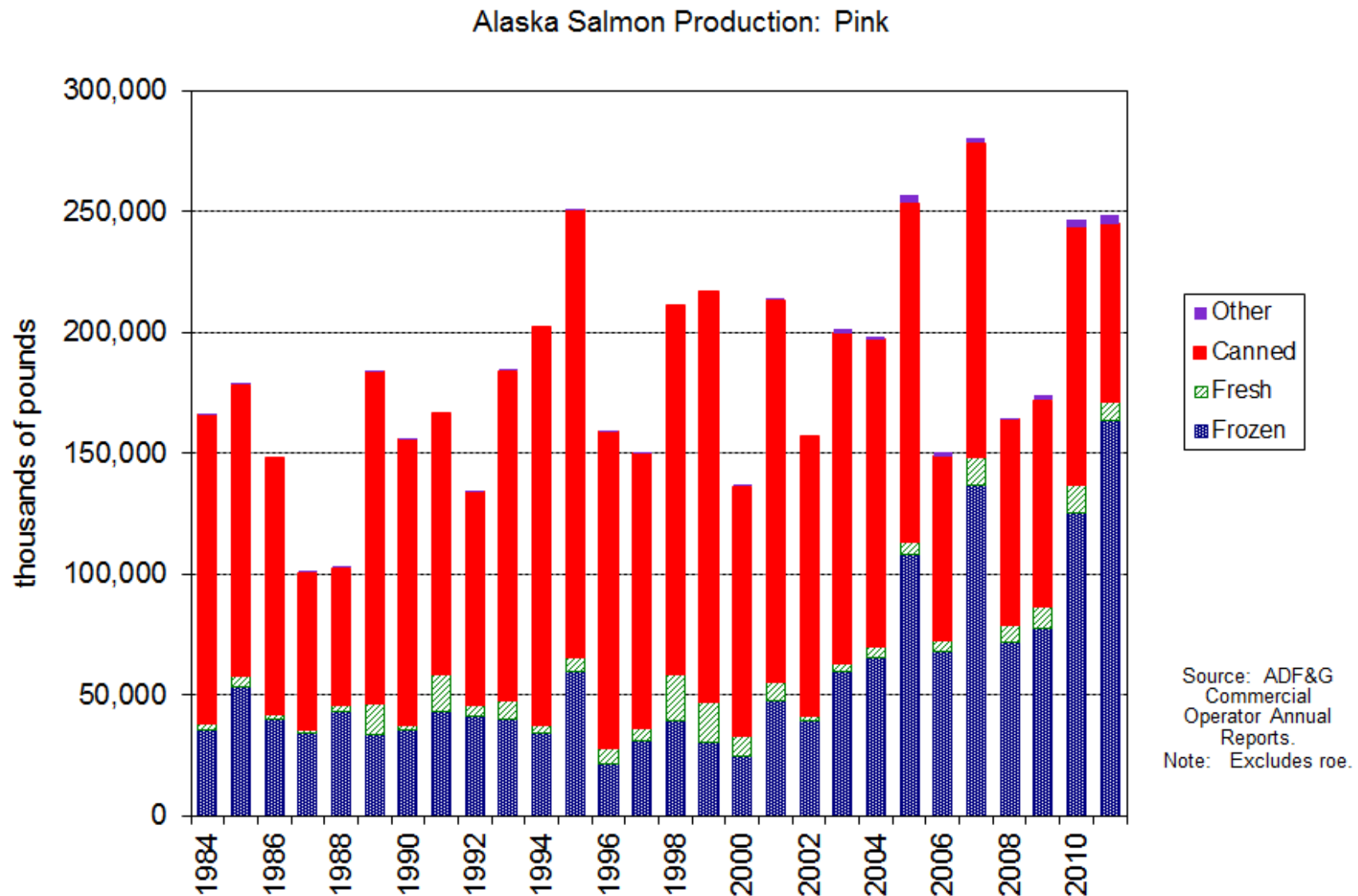


The frozen and fresh shares of sockeye production have increased over the past decade.

Share of Alaska Salmon Production: Sockeye

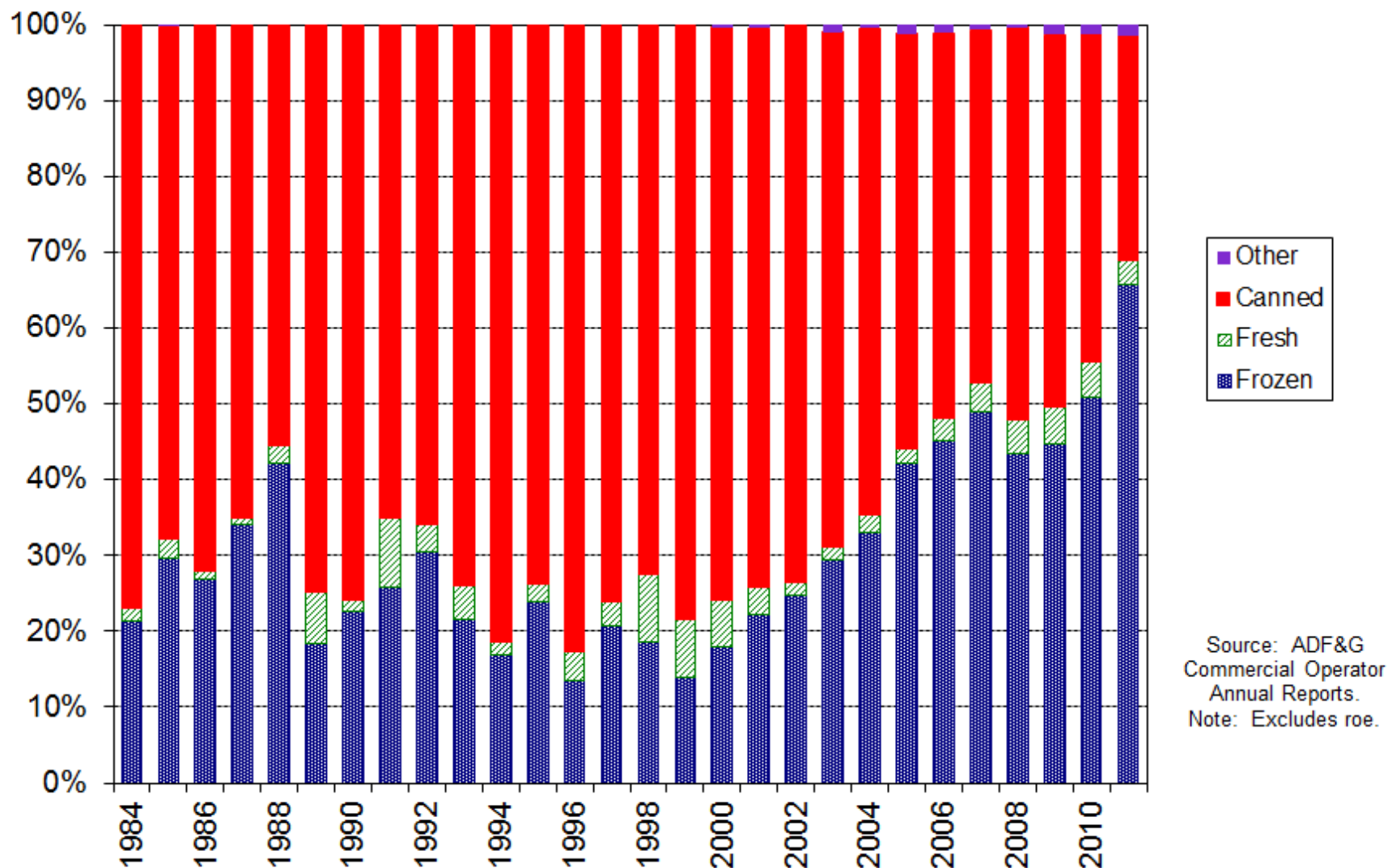


Historically most Alaska pink salmon was canned. Since 2002, however, frozen pink salmon production has been increasing rapidly.



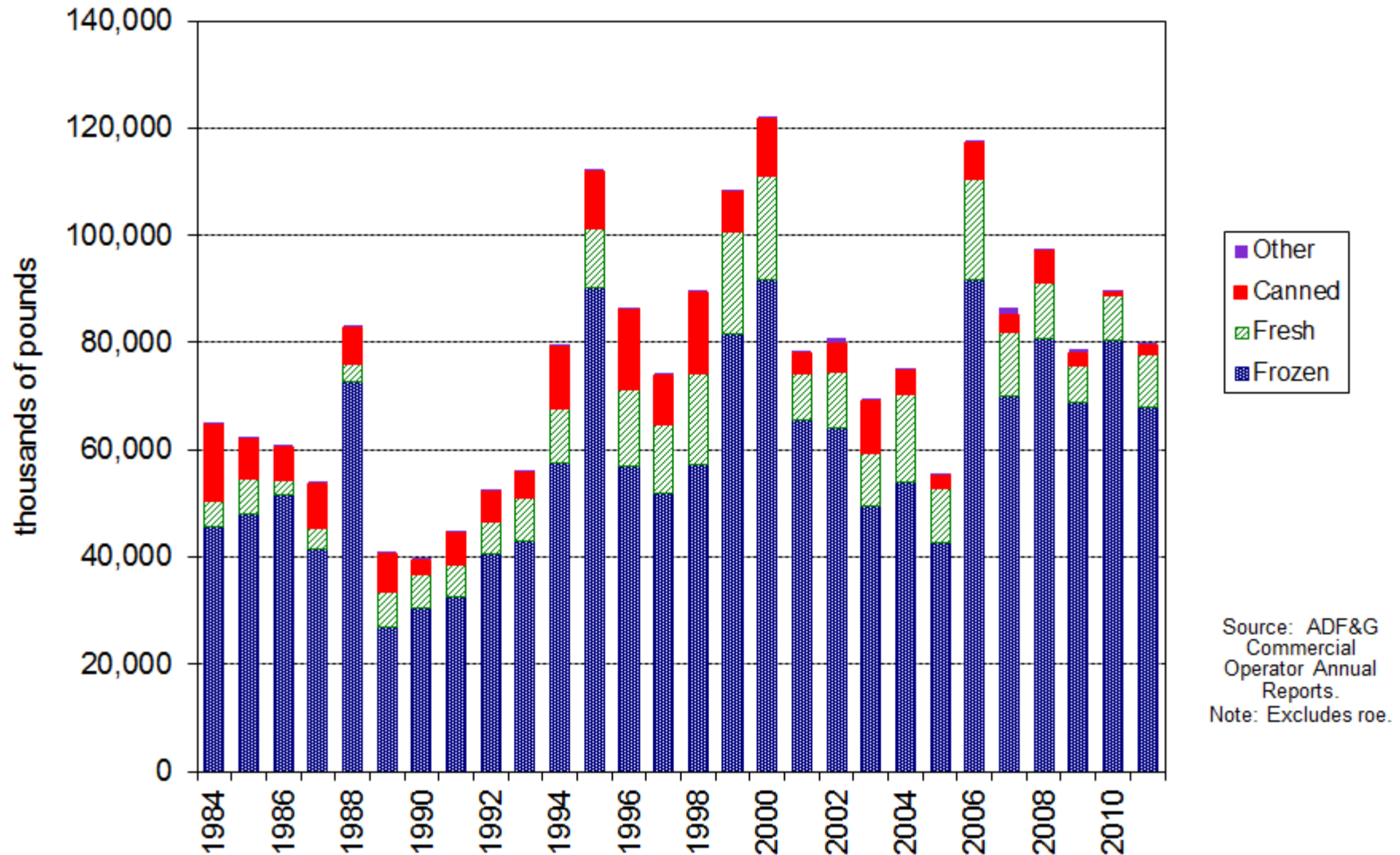
About 2/3 of Alaska pink salmon production was frozen in 2011—a dramatic increase from less than 20% in the late 1990s.

Share of Alaska Salmon Production: Pink



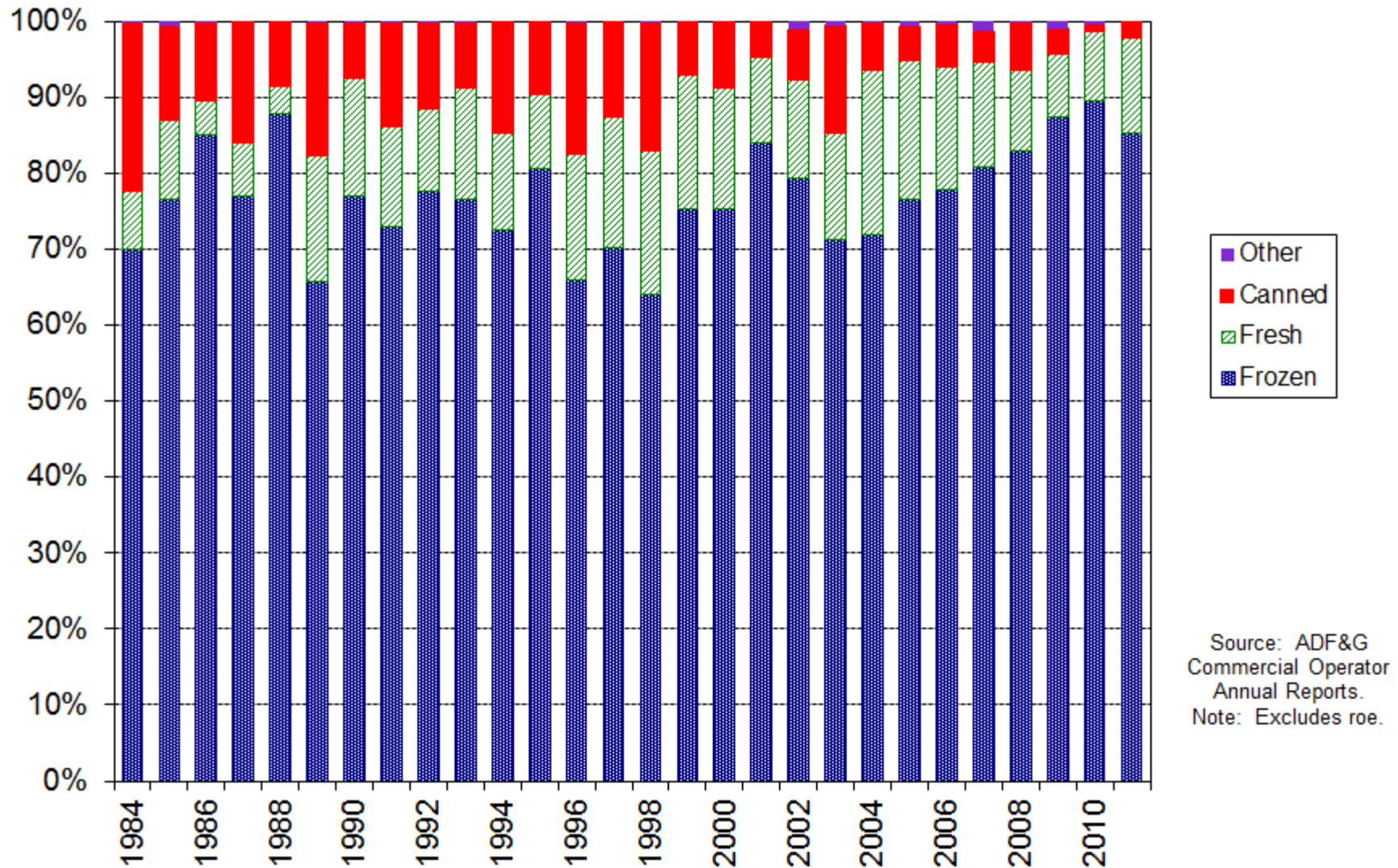
Most Alaska chum salmon is frozen.

Alaska Salmon Production: Chum

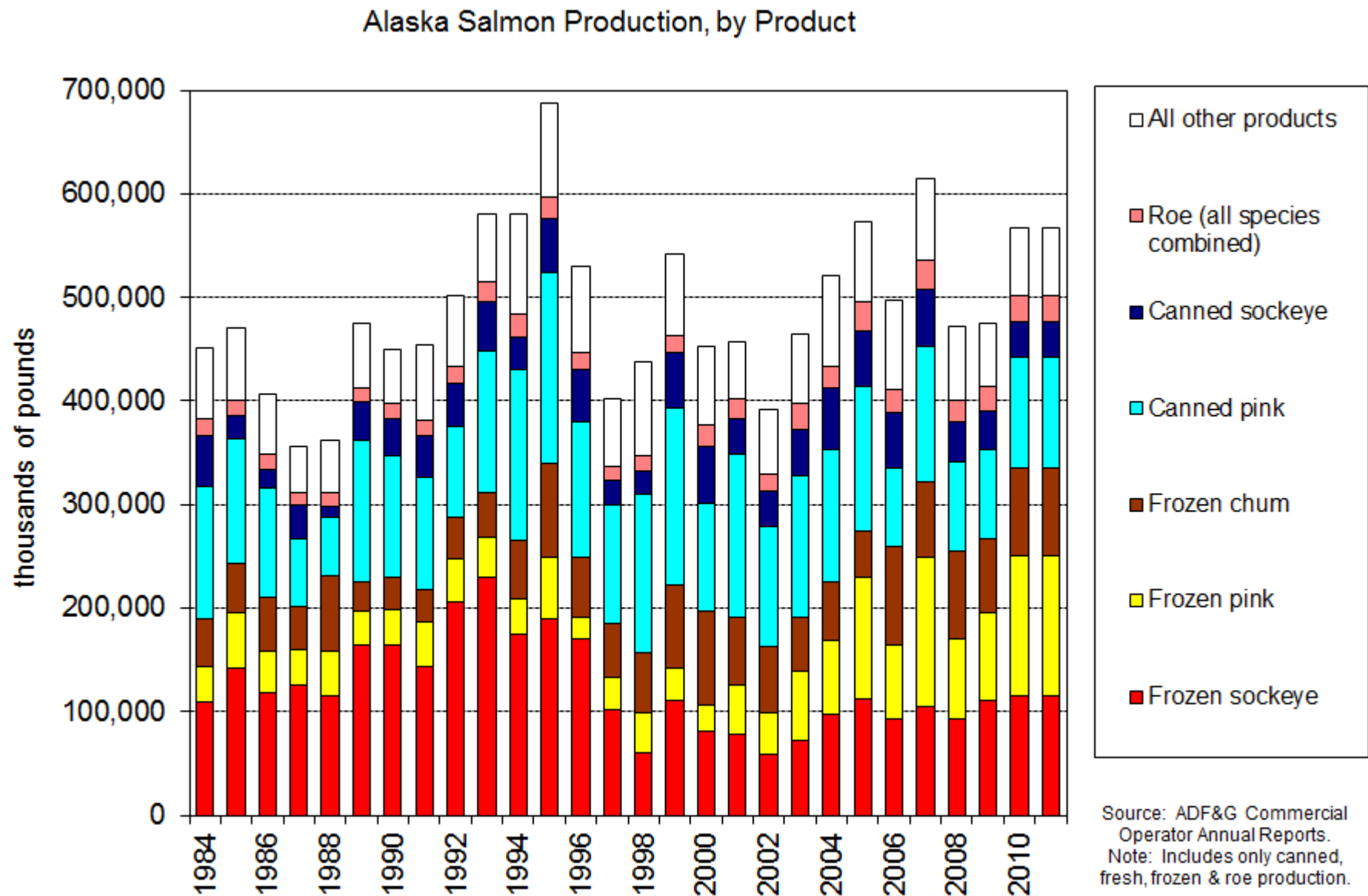


Over the past decade, the frozen share of Alaska chum salmon production rose, while the canned and fresh shares fell.

Share of Alaska Salmon Production: Chum



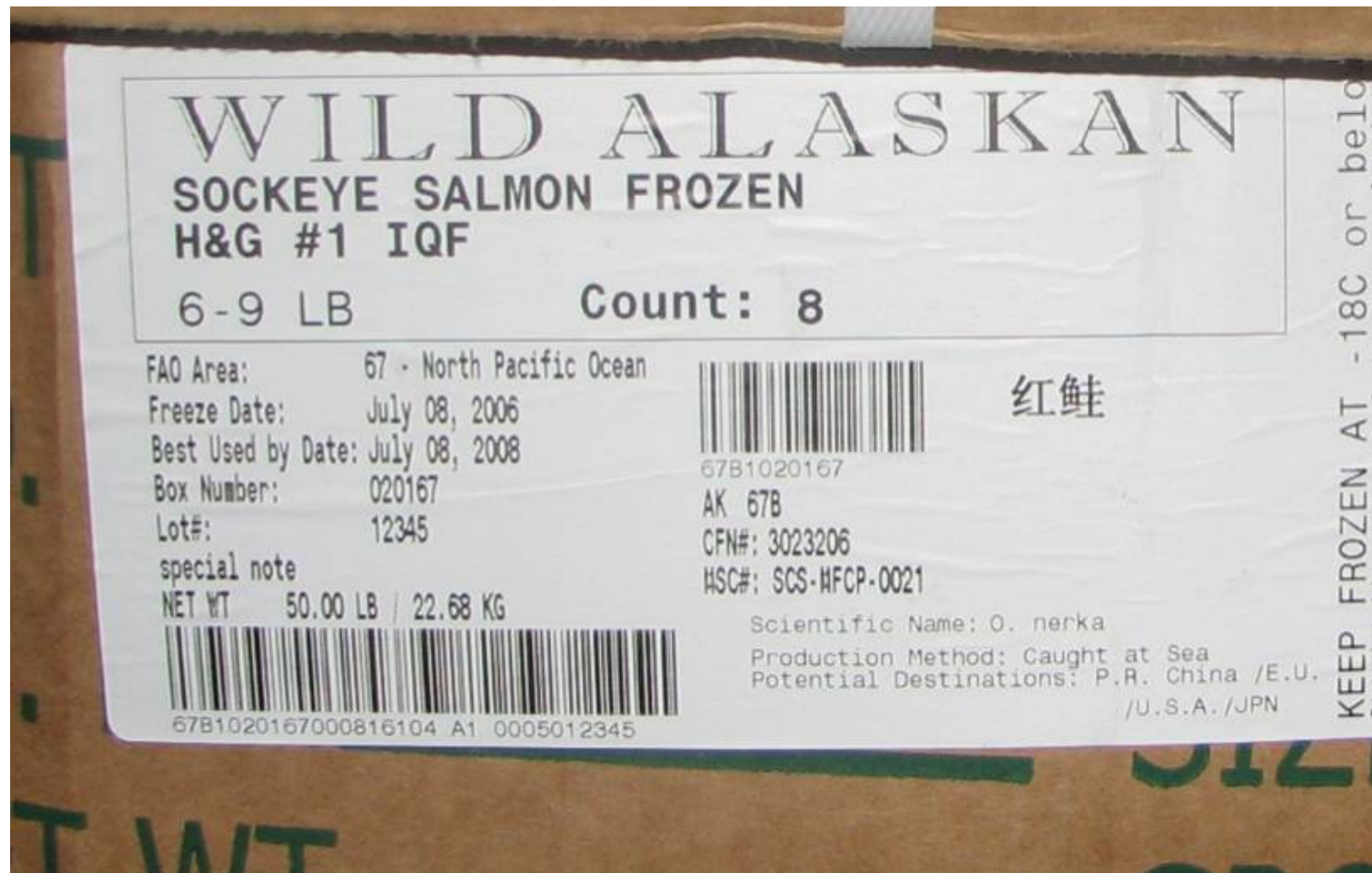
Five major product forms account for most of the volume of Alaska salmon production: frozen sockeye, frozen pink, frozen chum, canned pink, and canned sockeye.



PICTURES OF CHINESE SALMON REPROCESSING

Because China has become such an important market for Alaska frozen salmon over the past decade, I have included a few pictures in this presentation that I took several years ago at a processing plant in Qingdao, China, which reprocesses Alaska frozen salmon.

The cold storage at the plant was full of boxes of frozen H&G salmon (sockeye, coho, pink and chum) like the box in this picture.



The first stage of reprocessing is thawing the frozen H&G salmon.



Next workers fillet the salmon, after which the pinbones are pulled by hand.



The boneless fillets are placed in trays for freezing.




After freezing the frozen fillets are cut into portions.



This is the label on a box of frozen coho fillets.

COHO SALMON FILLET PORTION
(ONCORHYNCHUS KISUTSH)
PINBONED, SKIN-ON
4 OZ VAC PAC


480933


LOT: **CT 17467**

DAYCODE: **QJD13C711**

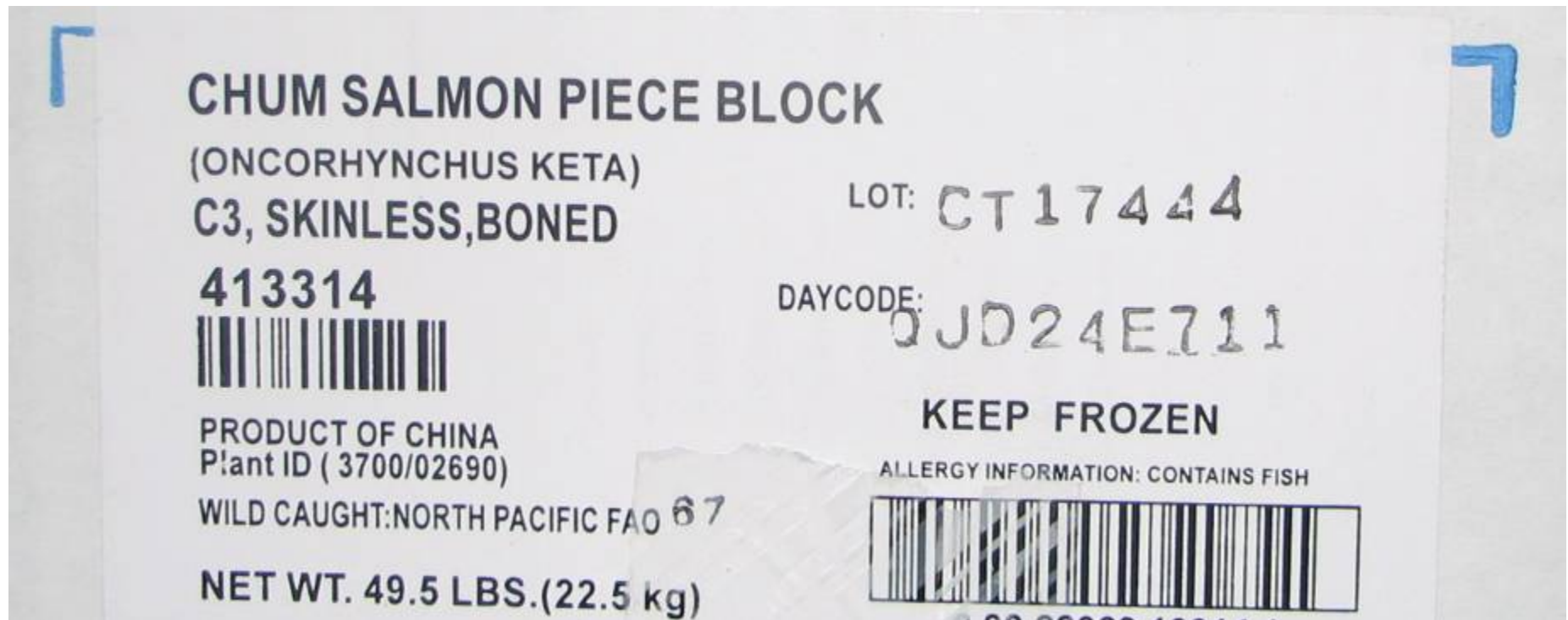
PRODUCT OF CHINA
Plant ID: 3700/02690
WILD CAUGHT: NORTH PACIFIC FAO

67

KEEP FROZEN
ALLERGY INFORMATION: CONTAINS FISH


NET WT. 10 LBS. (4.54 kg)

This is the label on a box of skinless boned chum salmon blocks.



This is the cover on the box for one of the many value-added products manufactured for the European market at the plant
(*Wildlachs* is German for “wild salmon”)



Very large numbers of workers are employed at the plant.



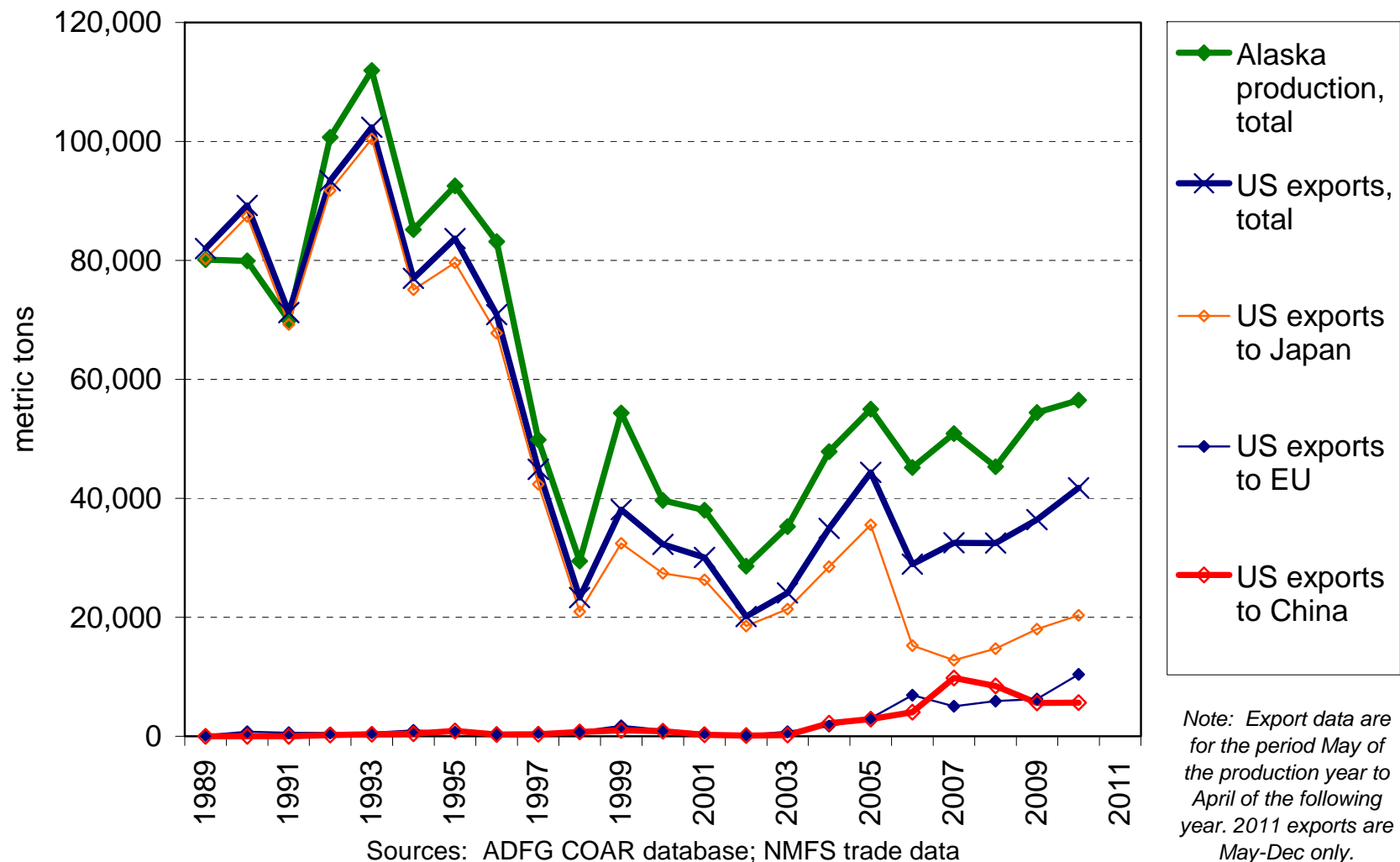
TRENDS IN EXPORTS AND END-MARKETS FOR MAJOR ALASKA SALMON PRODUCTS

The next ten graphs show trends in exports and estimated end-markets for each of the five major Alaska salmon product forms (frozen sockeye, frozen pink, frozen chum, canned pink, canned sockeye).

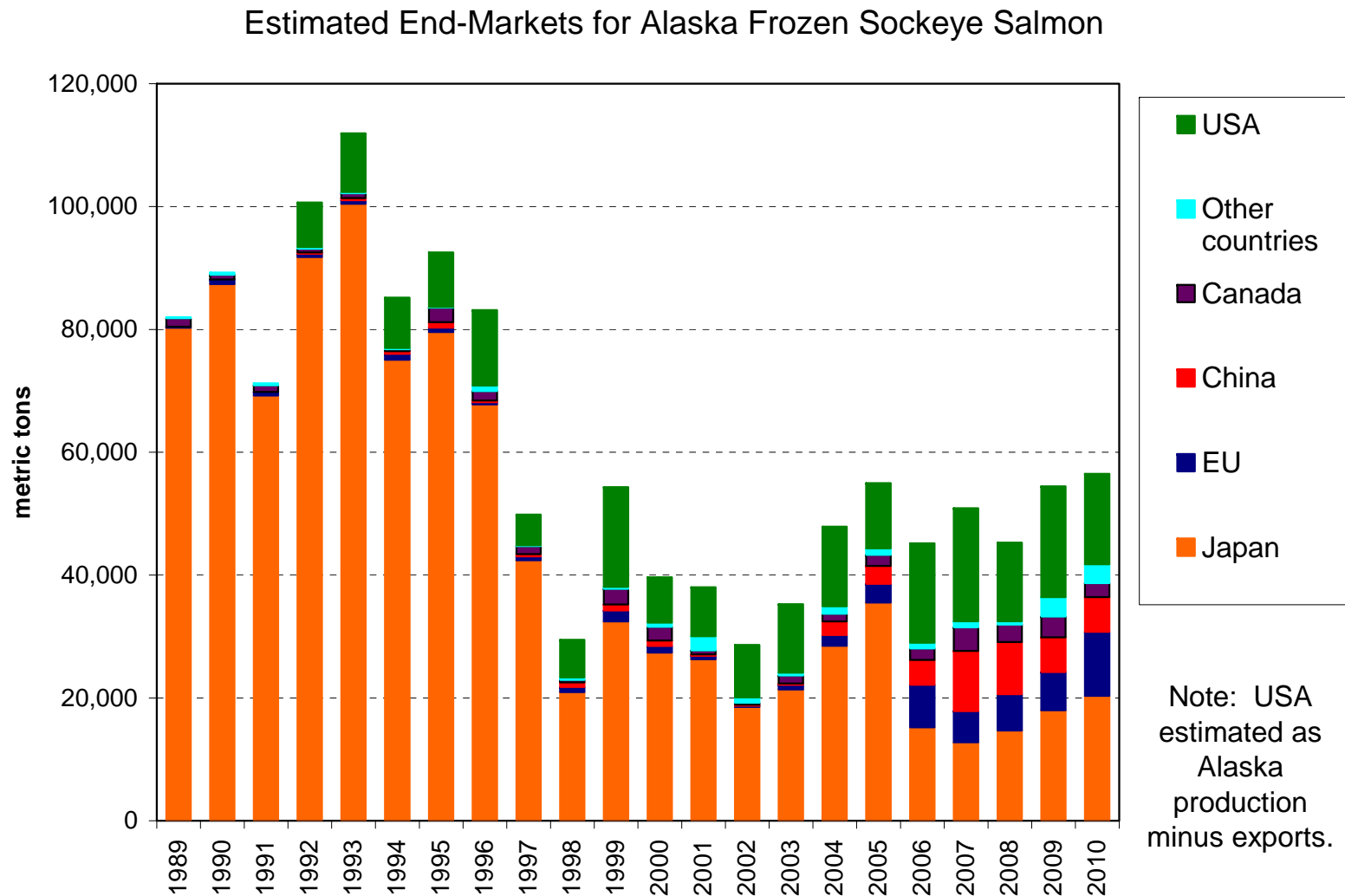
- There are two graphs for each product form.
- In the first graph for each product form:
 - The green line shows total Alaska production of the product as reported in the Commercial Operator Annual Report (COAR data)
 - The blue line shows total US exports of the product as reported in NMFS “Foreign Trade in Fisheries Products” data.
 - The other lines show exports of the product to the three or four largest foreign markets
 - By comparing the green line and the blue line, you can get a sense of the relative share of total production which is exported.
- The second graph is a stacked bar graph showing my estimates of the major end-markets for each product form.
 - The estimates for the different export markets are based on NMFS “Foreign Trade in Fisheries Products” data
 - I calculated the estimates for the “USA” by subtracting reported US exports (for the period from May to April of the following year) from reported Alaska production. This should be considered only an approximate estimate!

Over the past decade, the export share of Alaska frozen sockeye salmon production has declined. Frozen exports to Japan—which used to account for almost all frozen sockeye exports—have declined dramatically. Exports to China and the EU have risen significantly.

Alaska Production & U.S. Exports: Frozen Sockeye Salmon

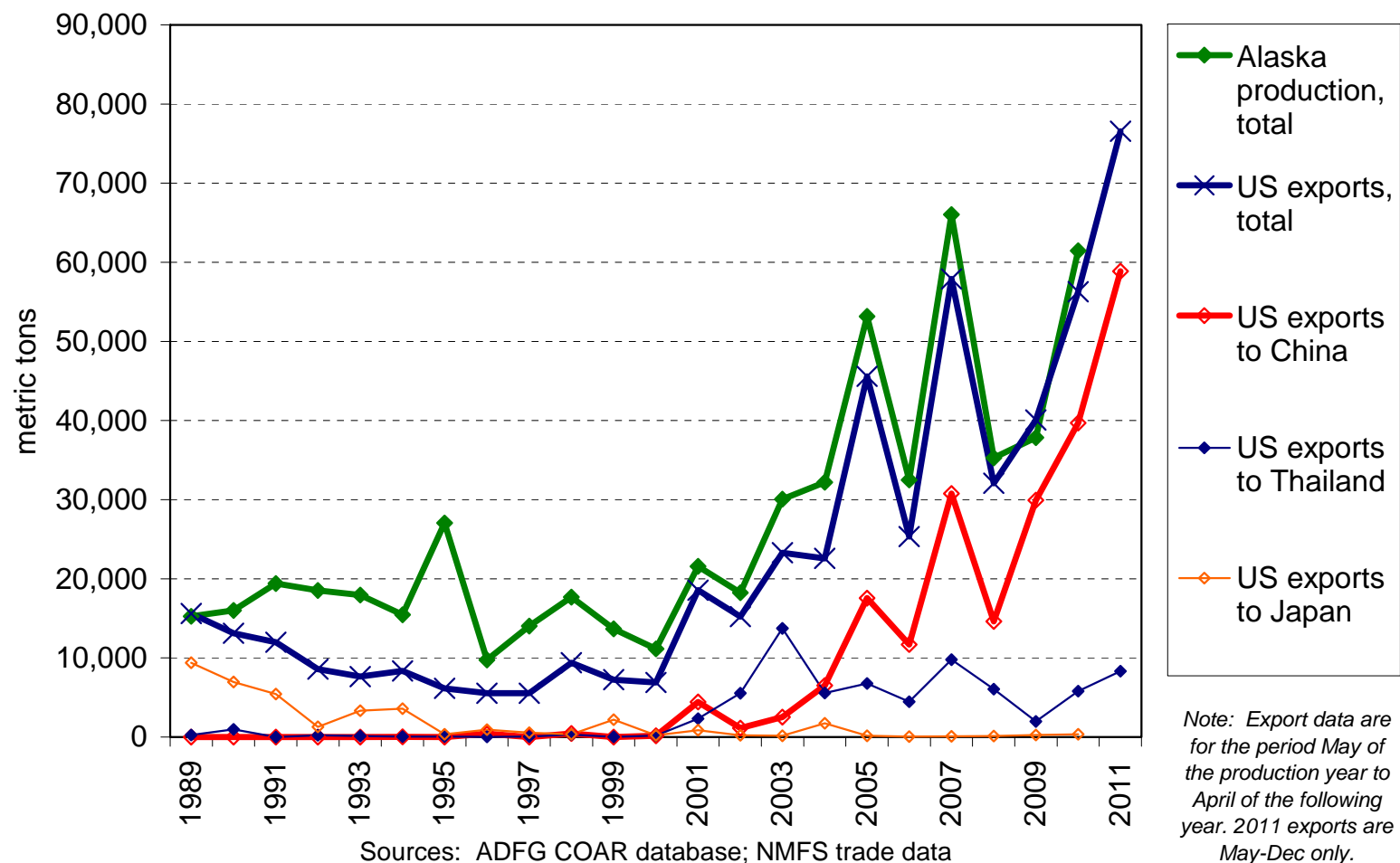


Over the past decade, end markets for Alaska frozen sockeye have become much more diversified. Formerly almost all frozen sockeye was exported to Japan. Although Japan still remains the largest market, now the USA, EU and China have all become important markets as well.



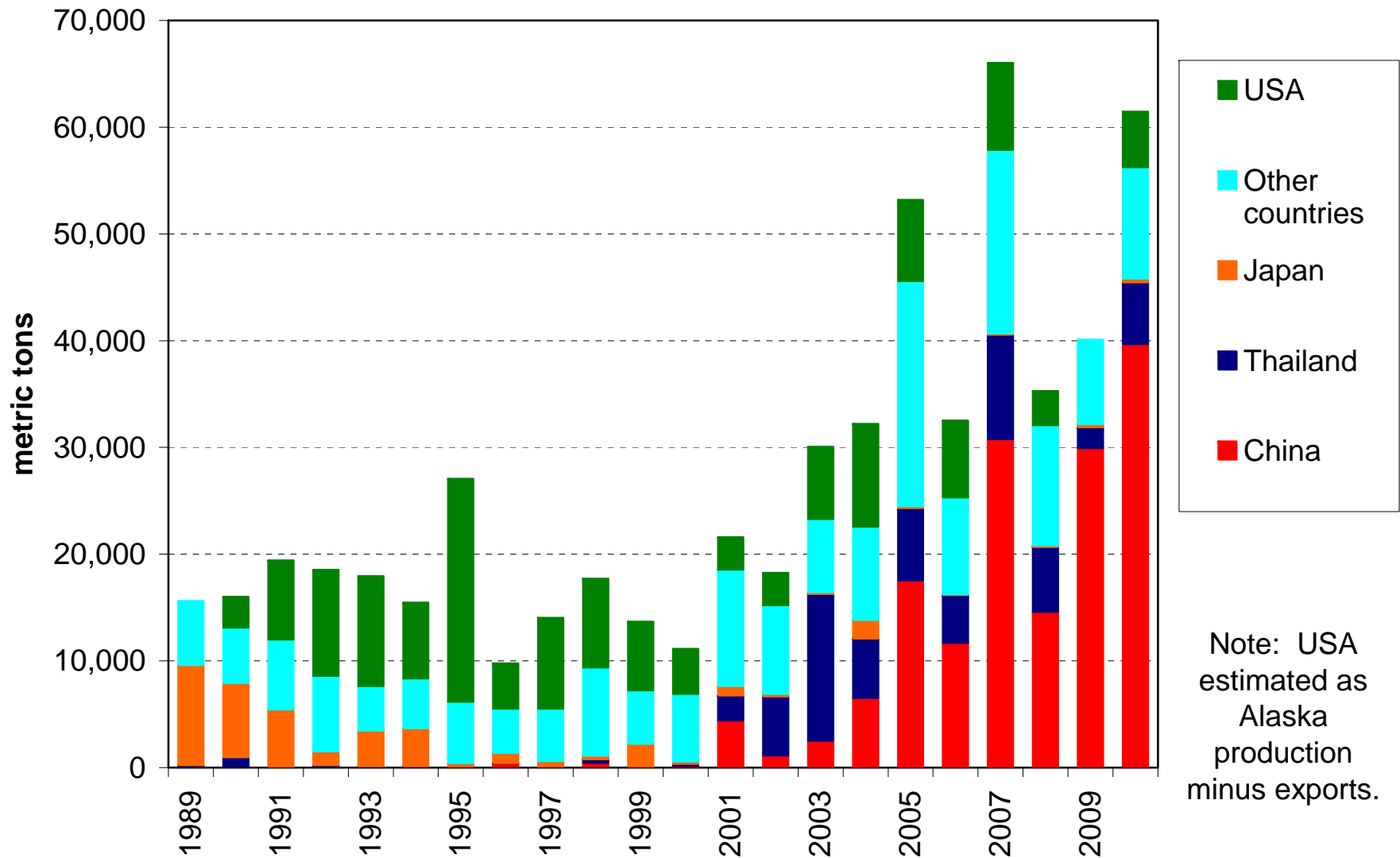
Especially during the past decade, almost all frozen pink salmon production has been exported, mostly to China. There has been a very dramatic increase in frozen pink salmon exports to China. Note that most of this frozen pink salmon is not being consumed by Chinese people! Most of it is reprocessed in China into value-added products which are re-exported to the US, EU and other markets. (This is also what is happening to US frozen sockeye and frozen chum exports to China.)

Alaska Production & U.S. Exports: Frozen Pink Salmon



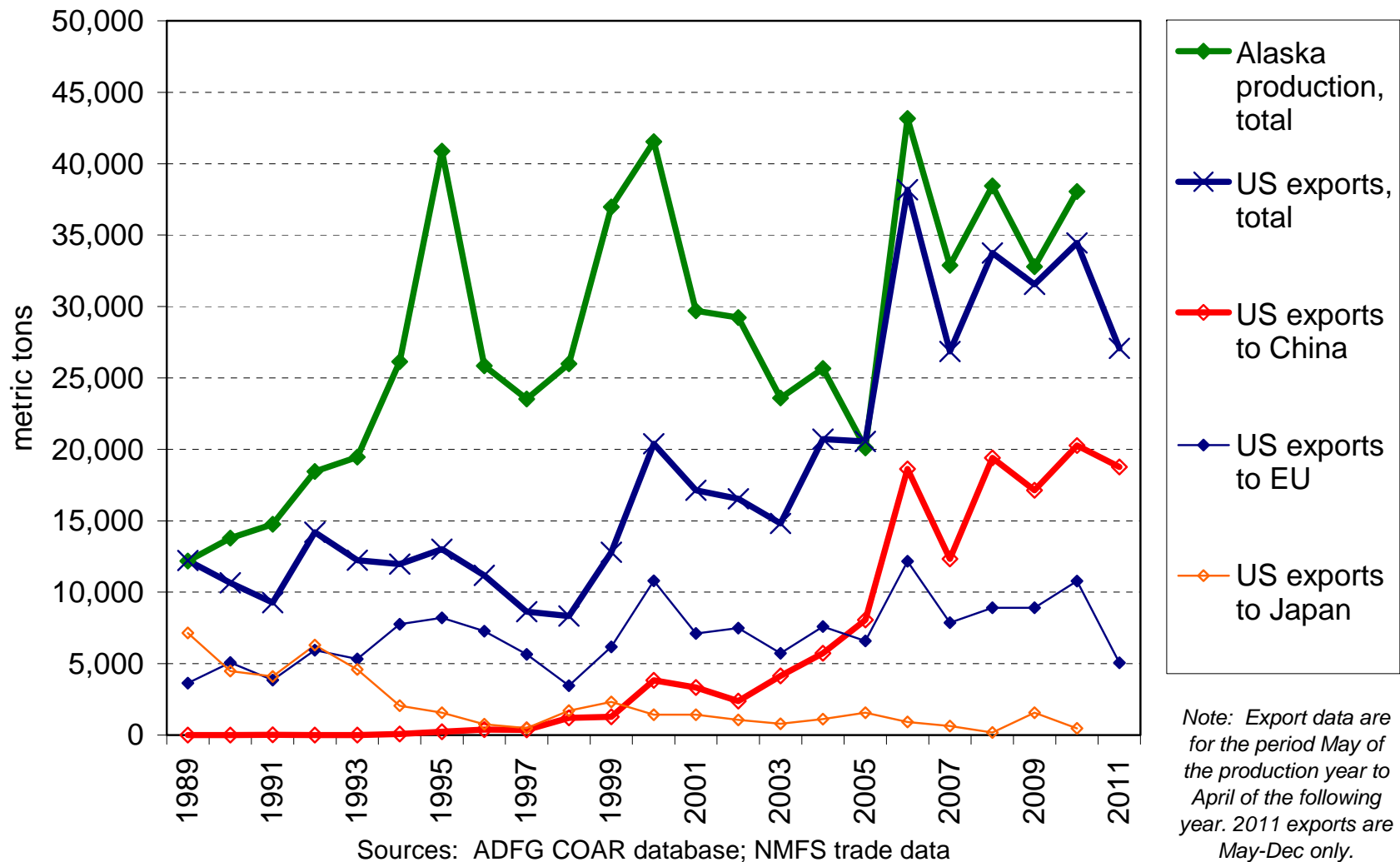
Most of the dramatic increase in Alaska frozen pink salmon production over the past decade has gone to China. Note that significant volumes are also exported to Thailand for reprocessing.

Estimated End-Markets for Alaska Frozen Pink Salmon



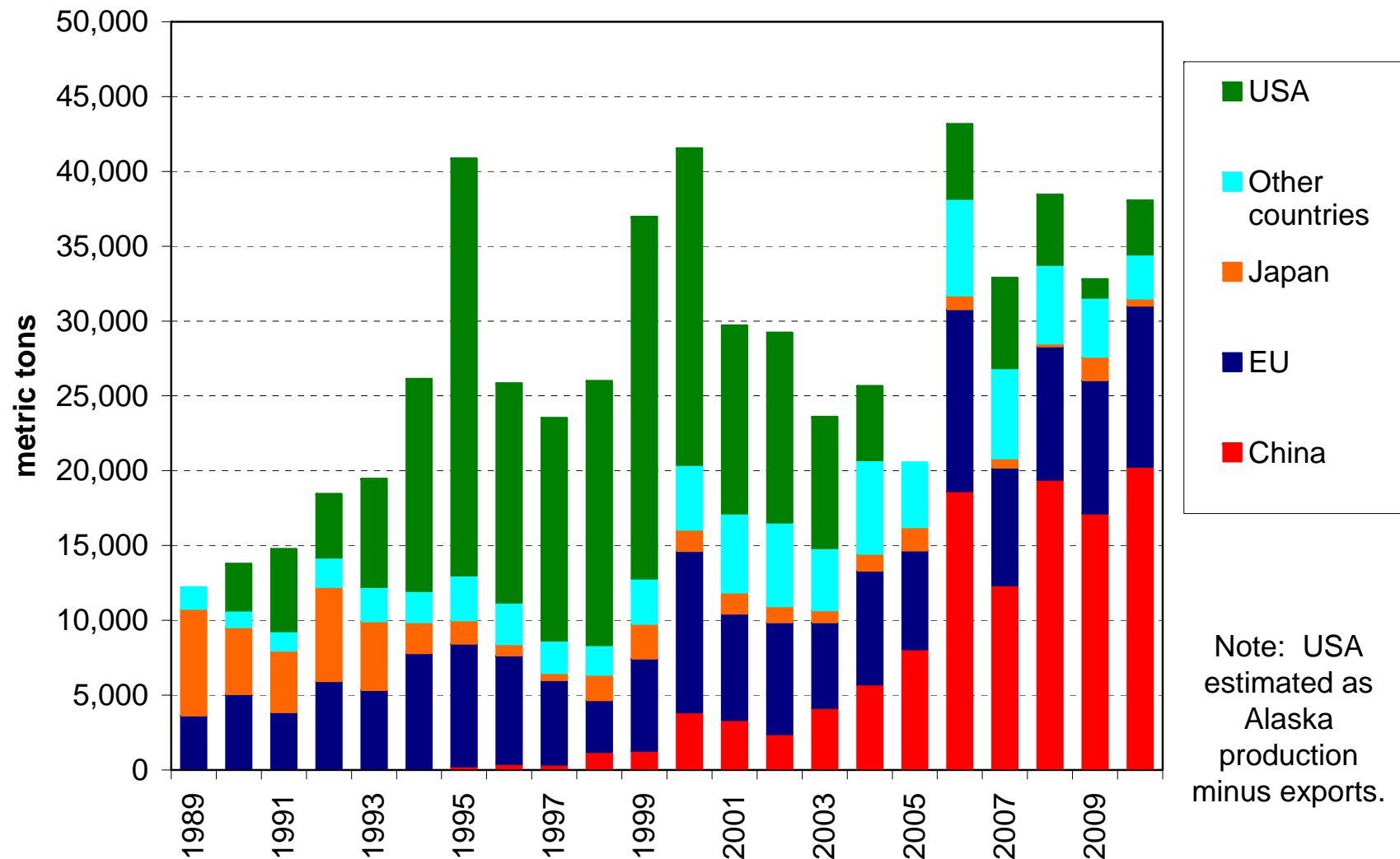
Over the past decade the export share of frozen chum salmon has risen dramatically. Since 2005 almost all frozen chum salmon has been exported. Exports to China have grown dramatically. The EU is also a very important export market.

Alaska Production and U.S. Exports: Frozen Chum Salmon



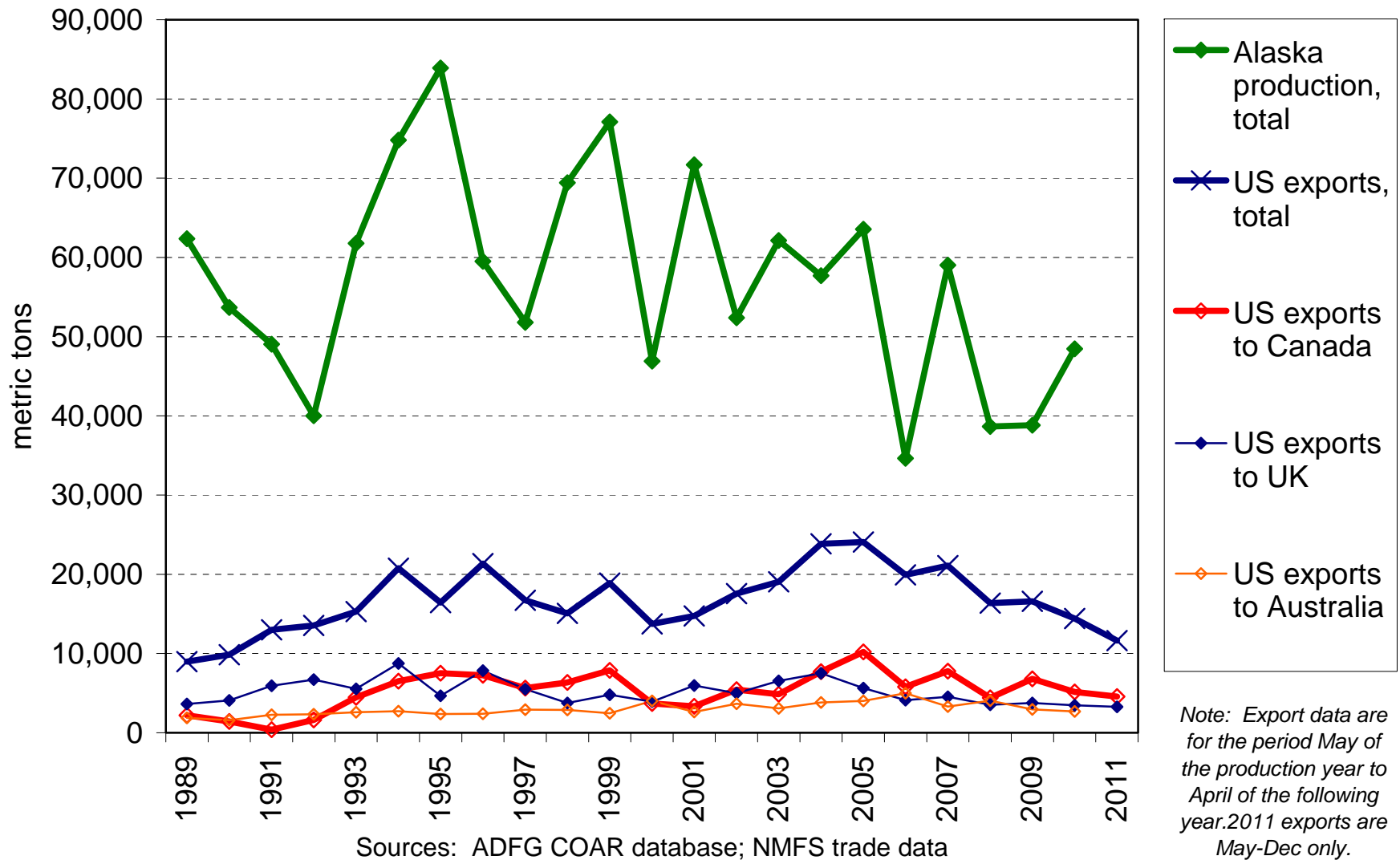
Over the past decade, exports of frozen chum salmon to China have risen dramatically, while estimated US domestic consumption has fallen. The EU is another very important export market.

Estimated End-Markets for Alaska Frozen Chum Salmon



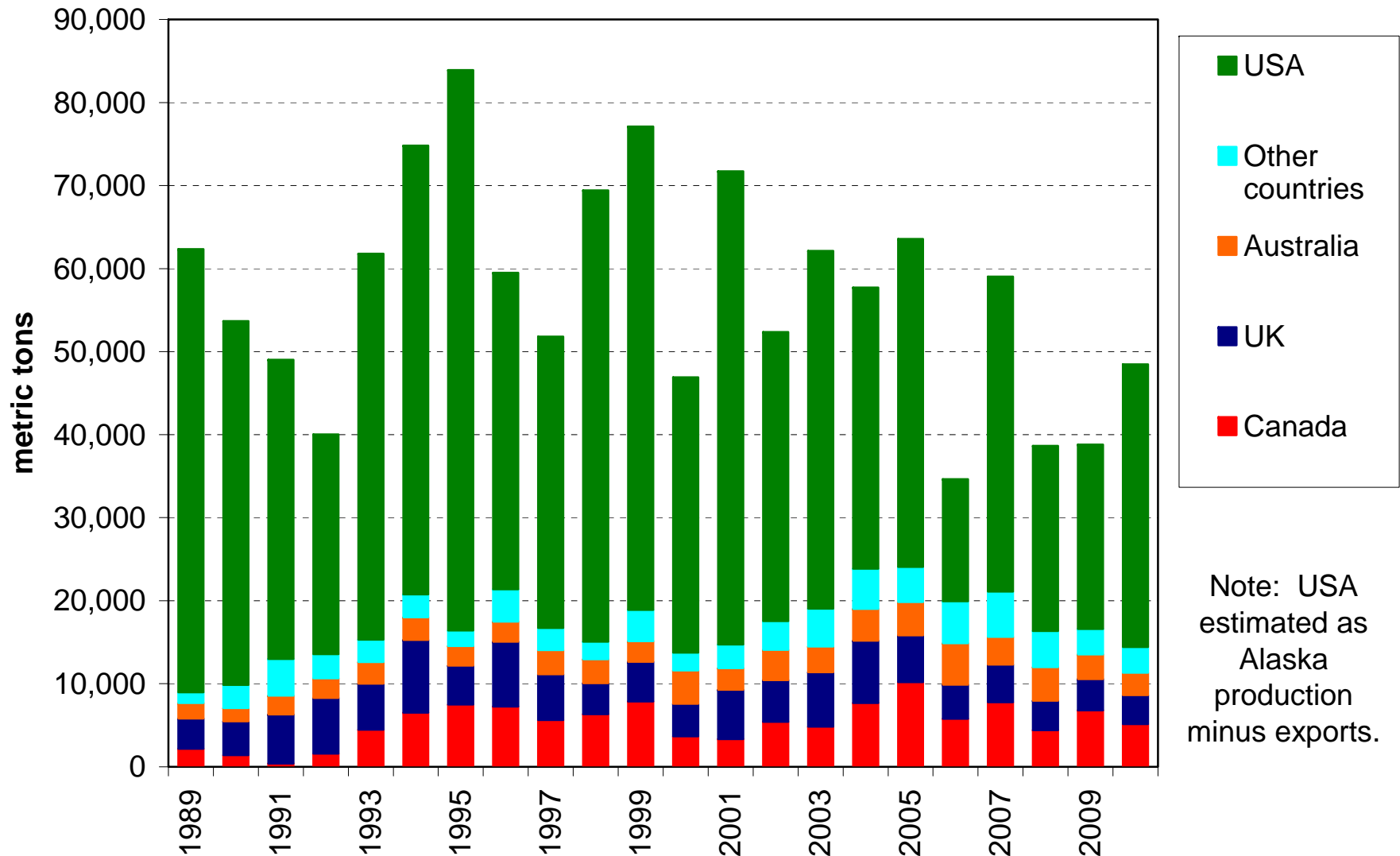
Exports account for a much smaller share of Alaska canned pink salmon production than for frozen salmon.

Alaska Production and US Exports: Canned Pink Salmon



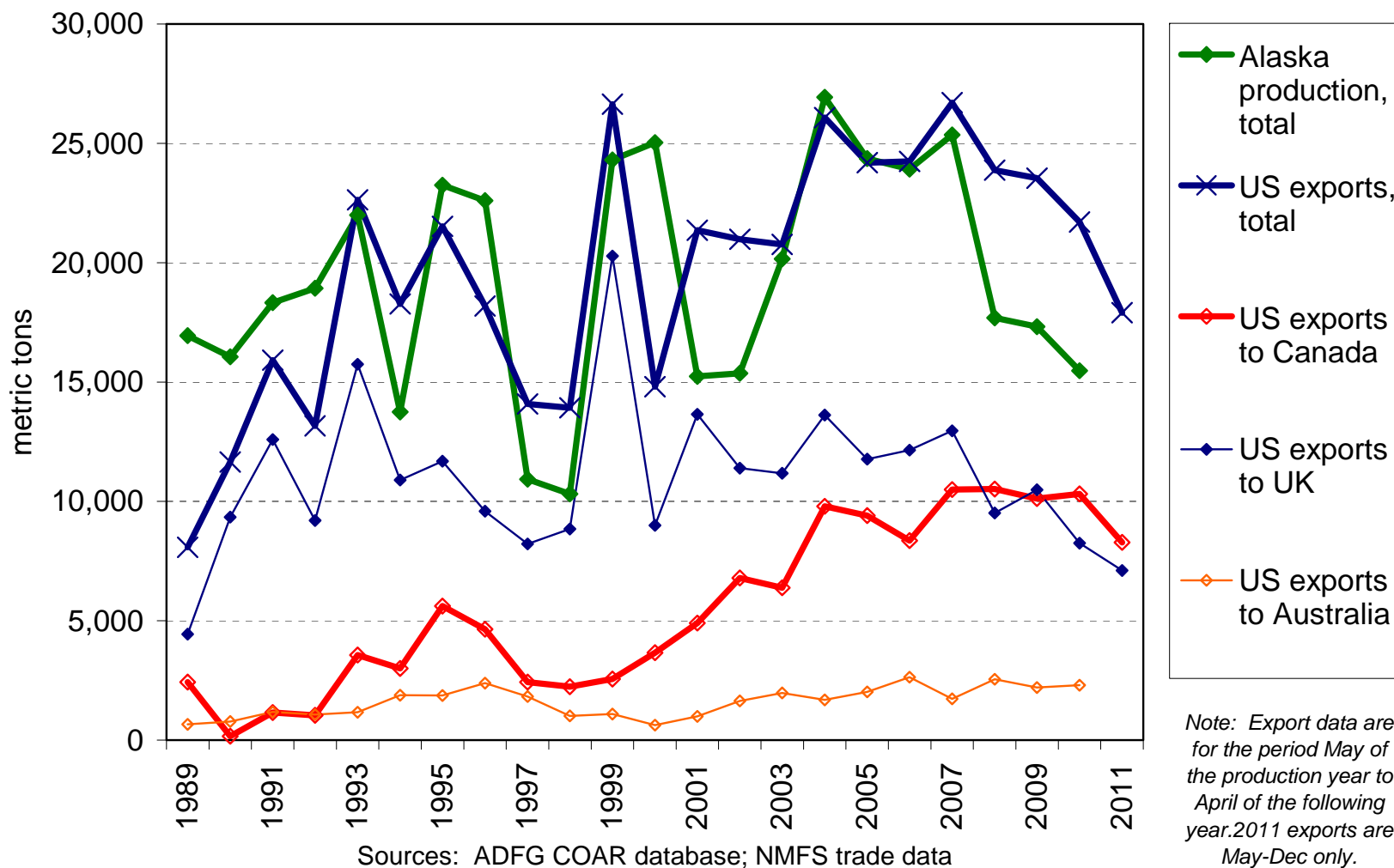
The largest end-market for canned pink salmon is the USA, followed by Canada, the UK and Australia. (According to industry sources, most canned pink “falls” are sold in the US market, while a larger share of canned pink “halves” are sold in export markets.)

Estimated End-Markets for Alaska Canned Pink Salmon



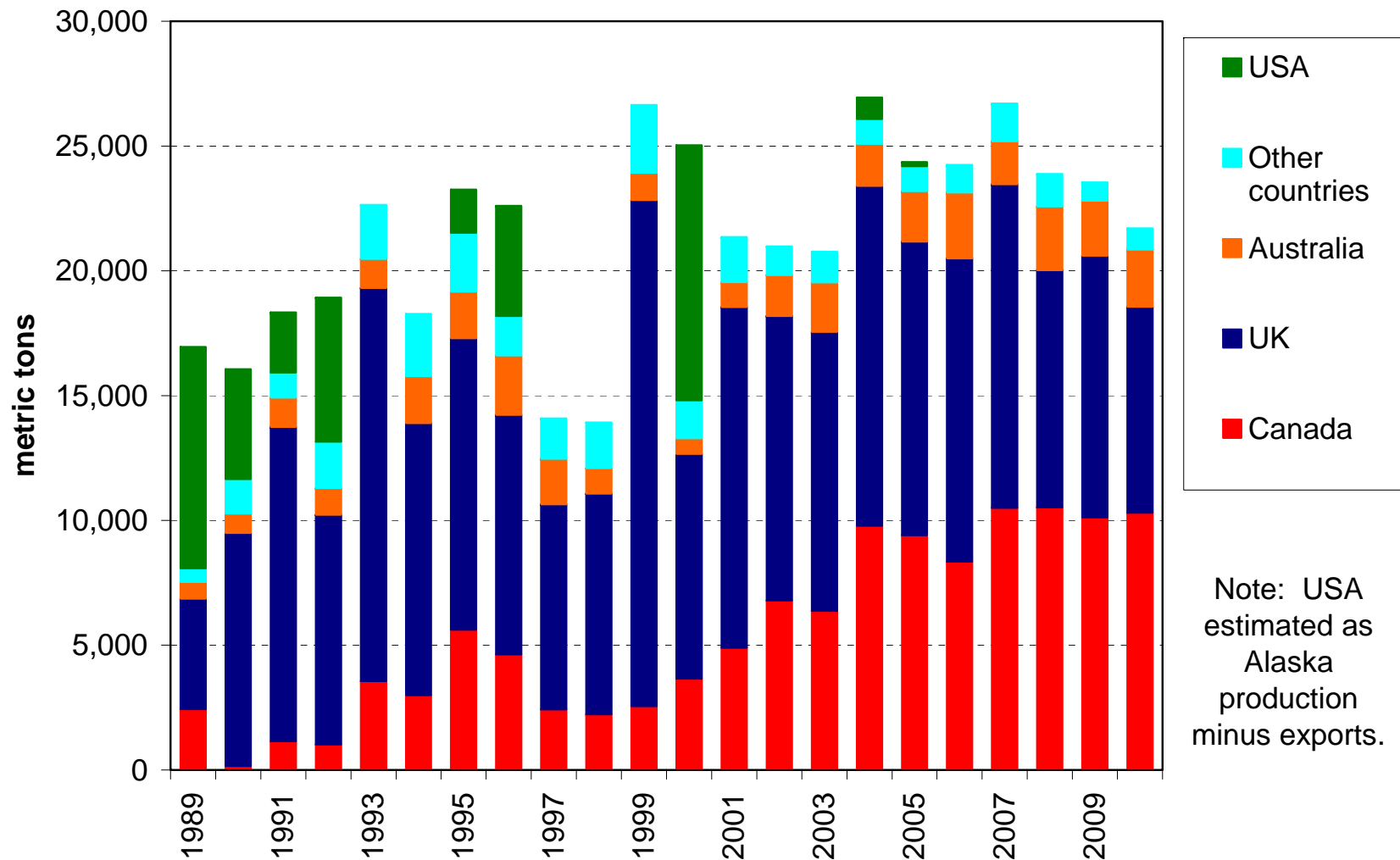
Estimating end markets for canned sockeye salmon is complicated by the fact that reported US exports have exceeded total Alaska production in some years. This probably is due, in part, to exports in some years of carryover inventories from previous years. In any case, it is clear that most canned sockeye salmon is exported. The most important export markets are Canada, the UK and Australia.

Alaska Production and US Exports: Canned Sockeye Salmon



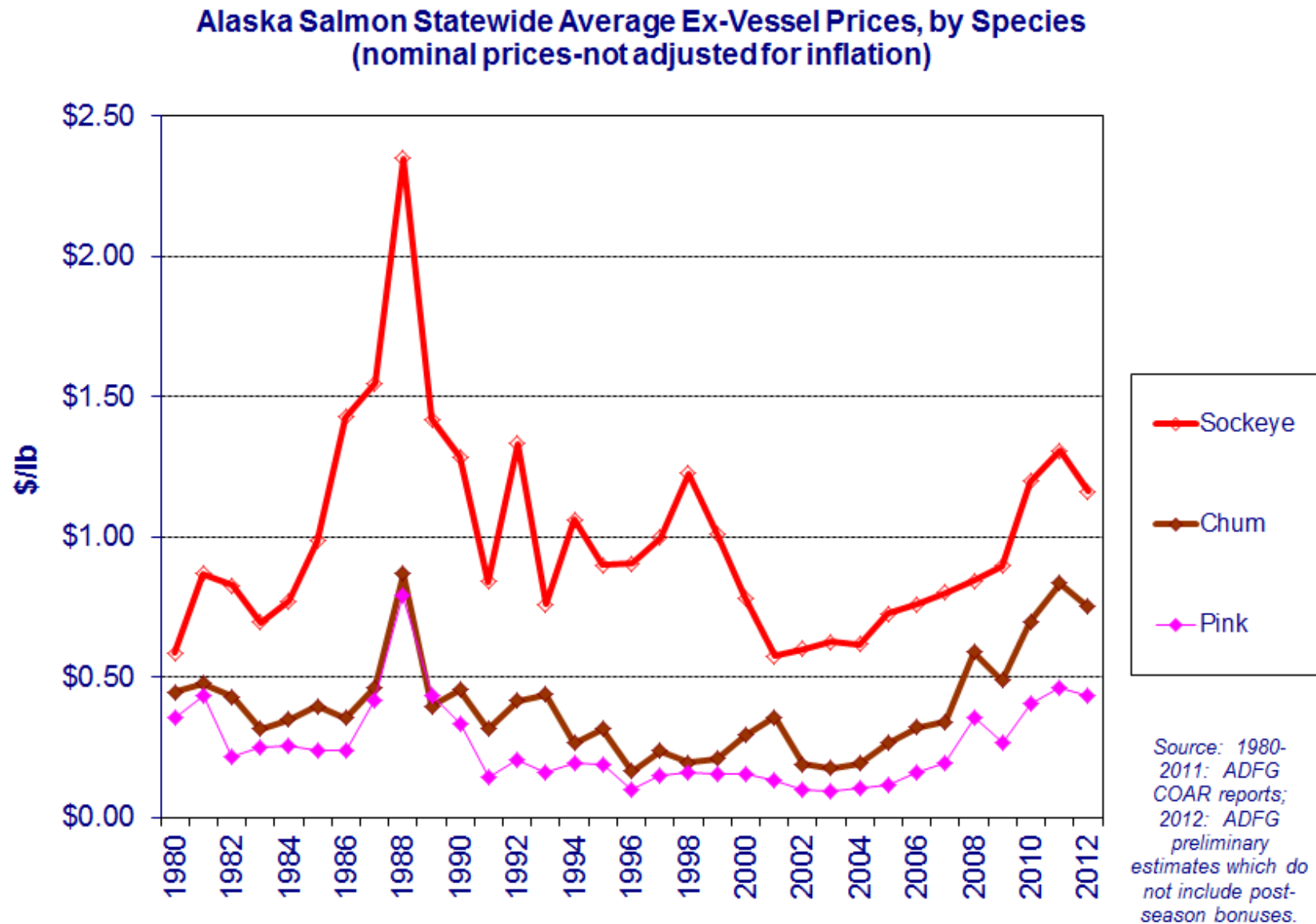
The share of canned sockeye salmon exported to Canada increased over the past decade. Note that the estimates for the USA are not reliable, given the problems associated with estimating US consumption as Alaska production minus exports, when exports in some years are partly carryover production from earlier years.

Estimated End-Markets for Alaska Canned Sockeye Salmon

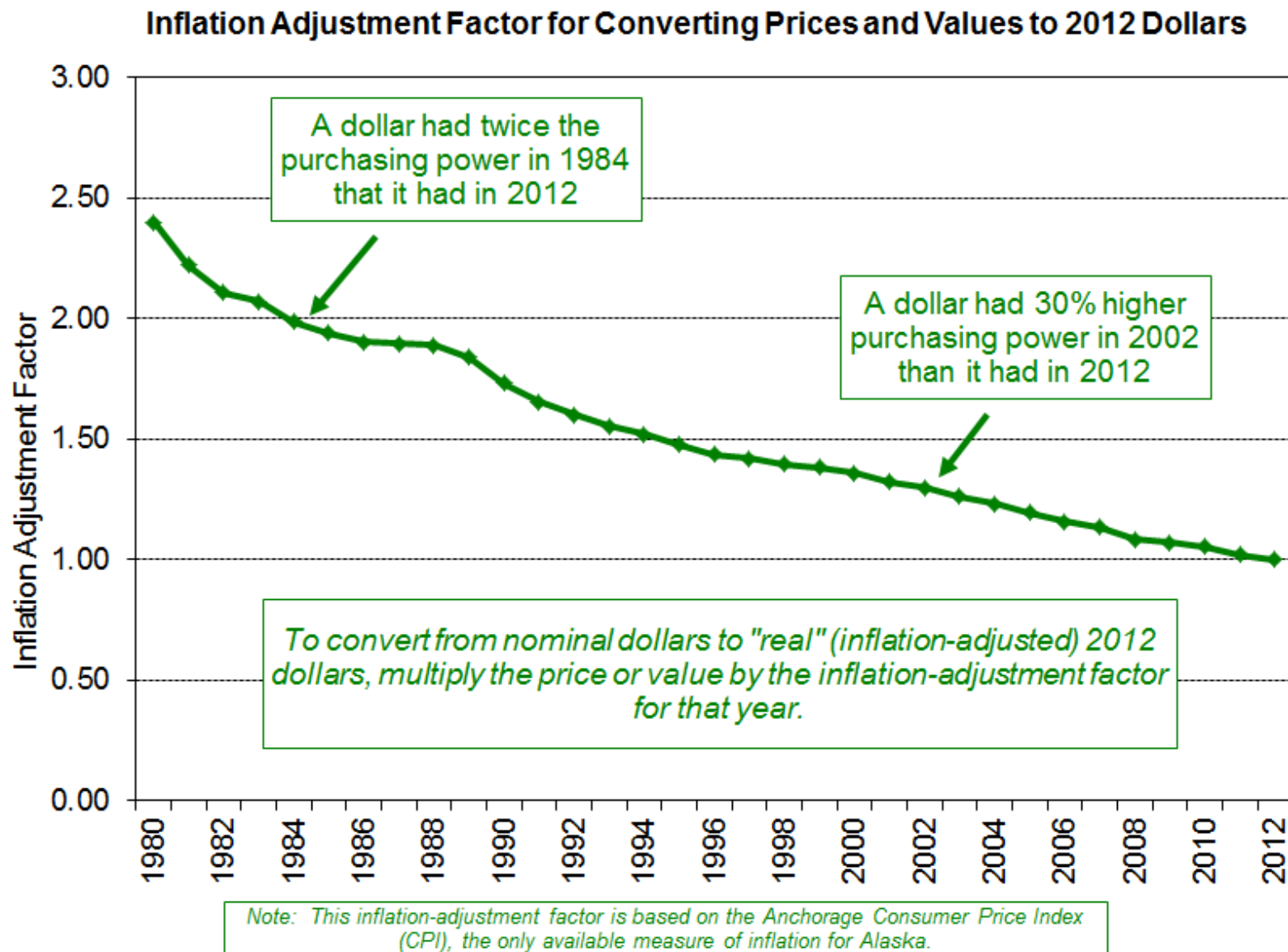


TRENDS IN EX-VESSEL PRICES PAID TO FISHERMEN

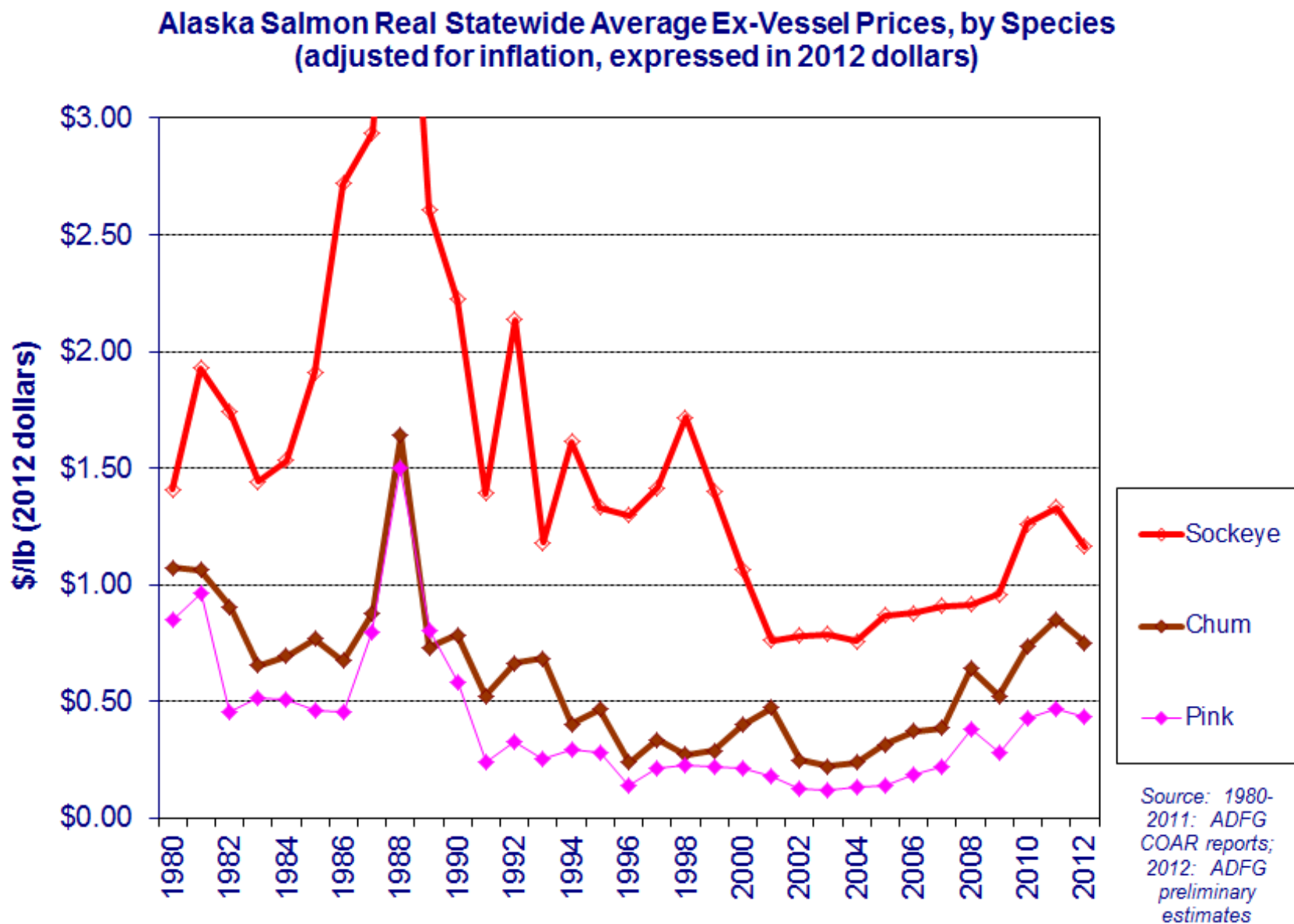
Ex-vessel prices for Alaska salmon fell drastically in 1990s but have rebounded dramatically since 2002. Prices fell in 2012—but probably not as much as shown in the graph, because the data in the graph are preliminary estimates which don't include post-season adjustments).



In comparing long-term price and value trends it's important to remember that there has been significant inflation since the 1980s.



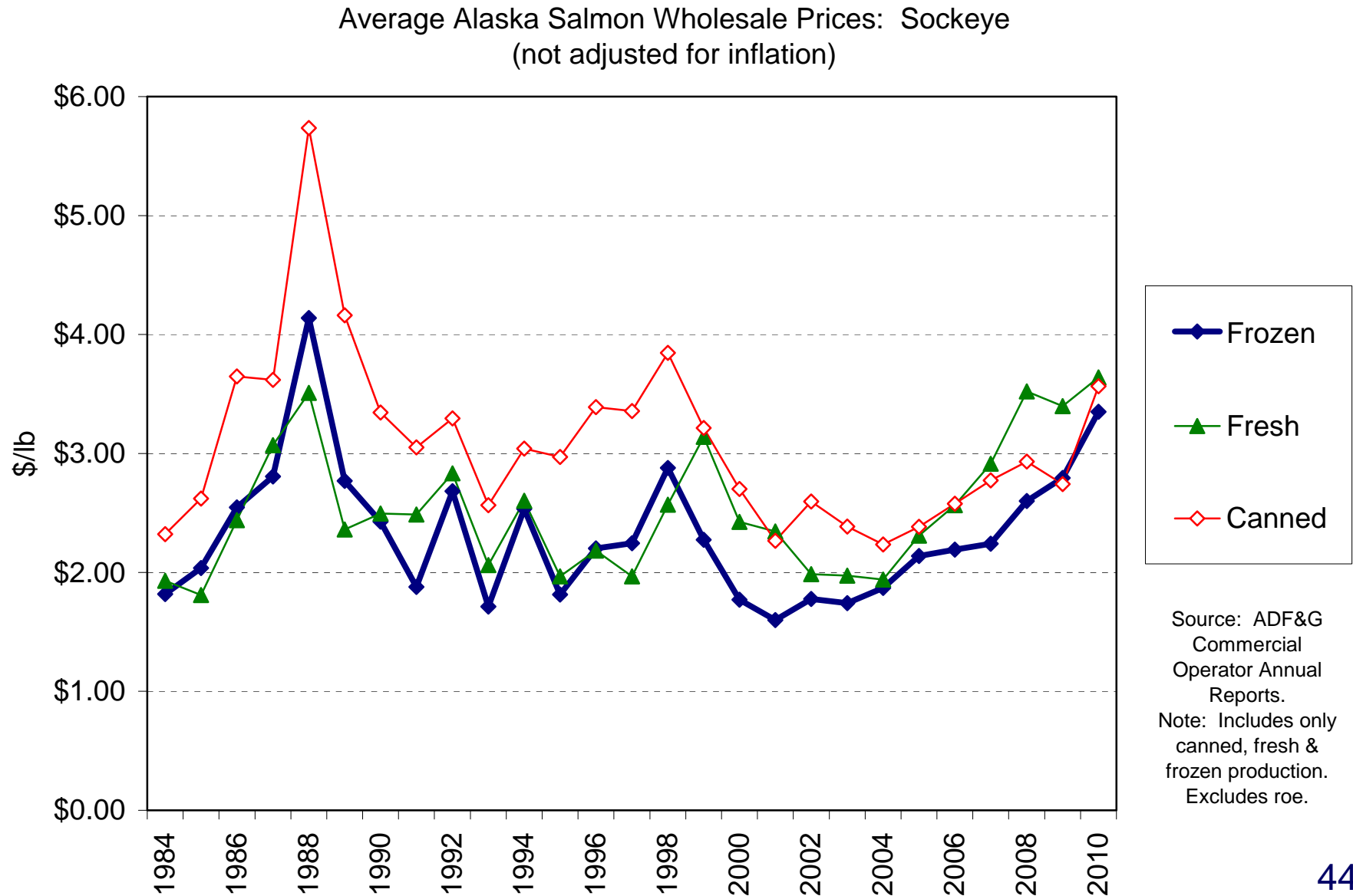
After adjusting for inflation, the rebound in ex-vessel prices since 2002 is still big but doesn't appear quite as dramatic.



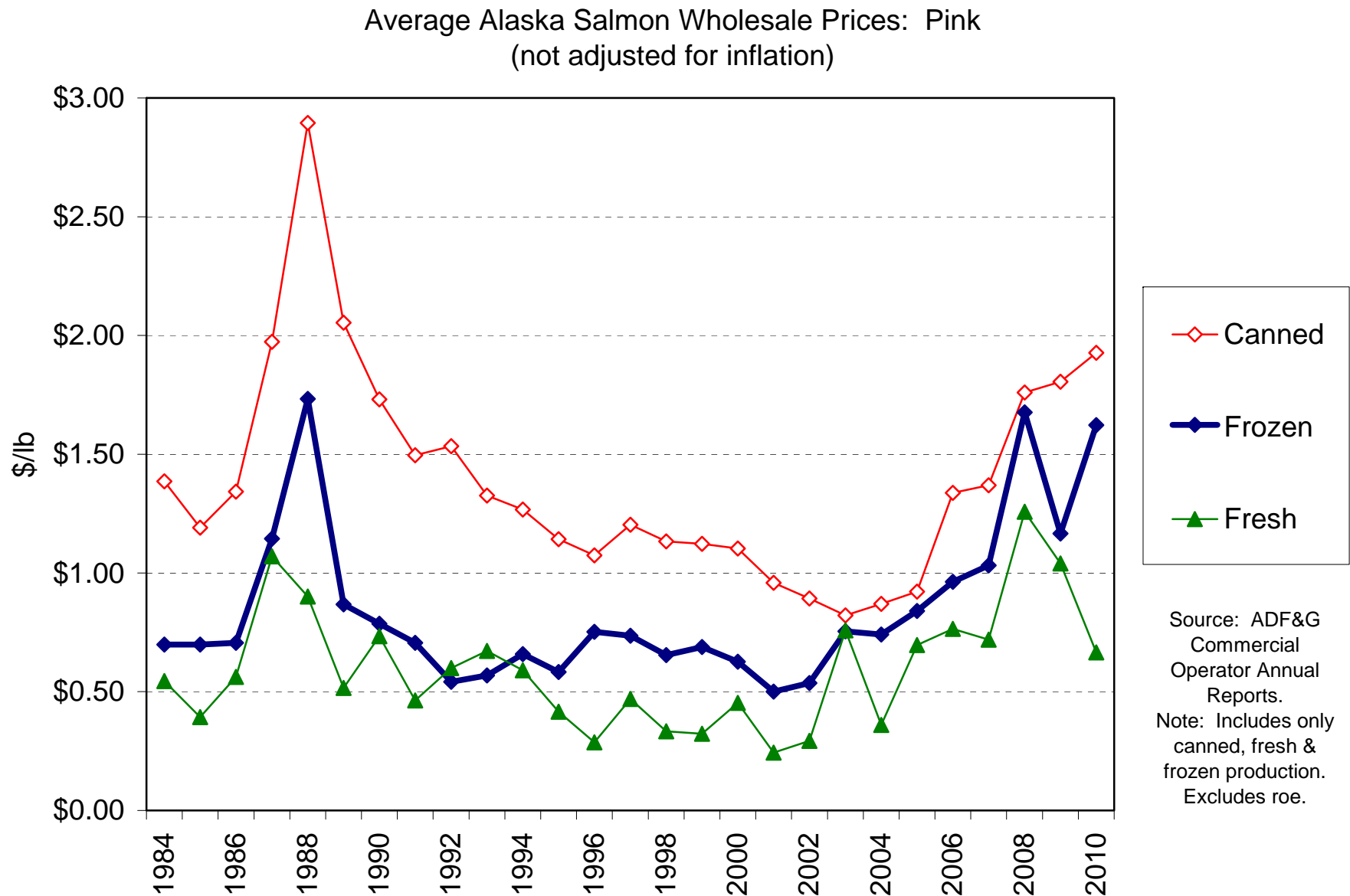
TRENDS IN FIRST WHOLESALE PRICES PAID TO PROCESSORS

Note: These graphs are based on Commercial Operator Annual Report (COAR) data which are only available through 2011.

Wholesale prices for frozen, canned and fresh sockeye salmon
have risen dramatically since the early 2000s.

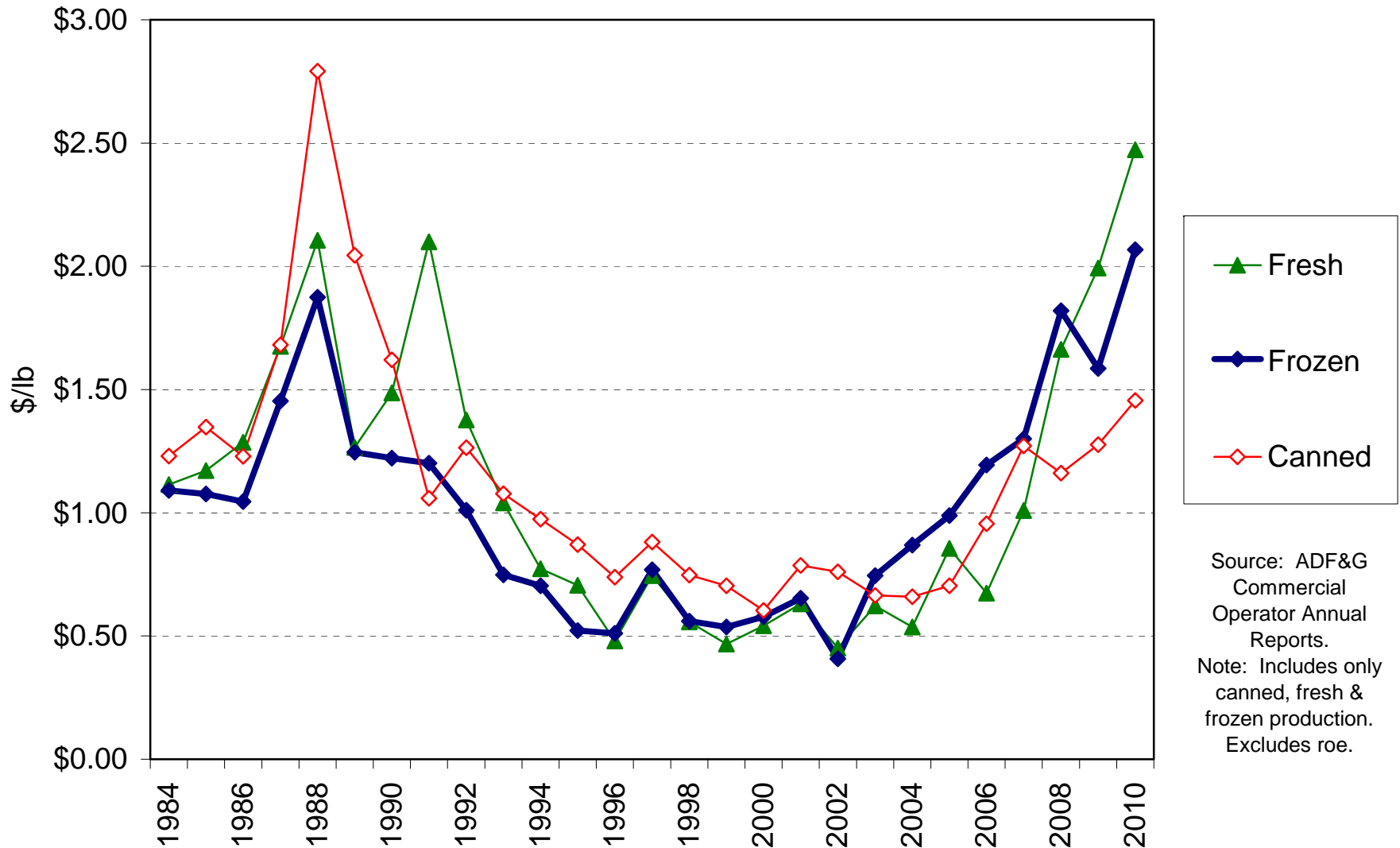


Wholesale prices for canned and frozen pink salmon have risen dramatically since the early 2000s.



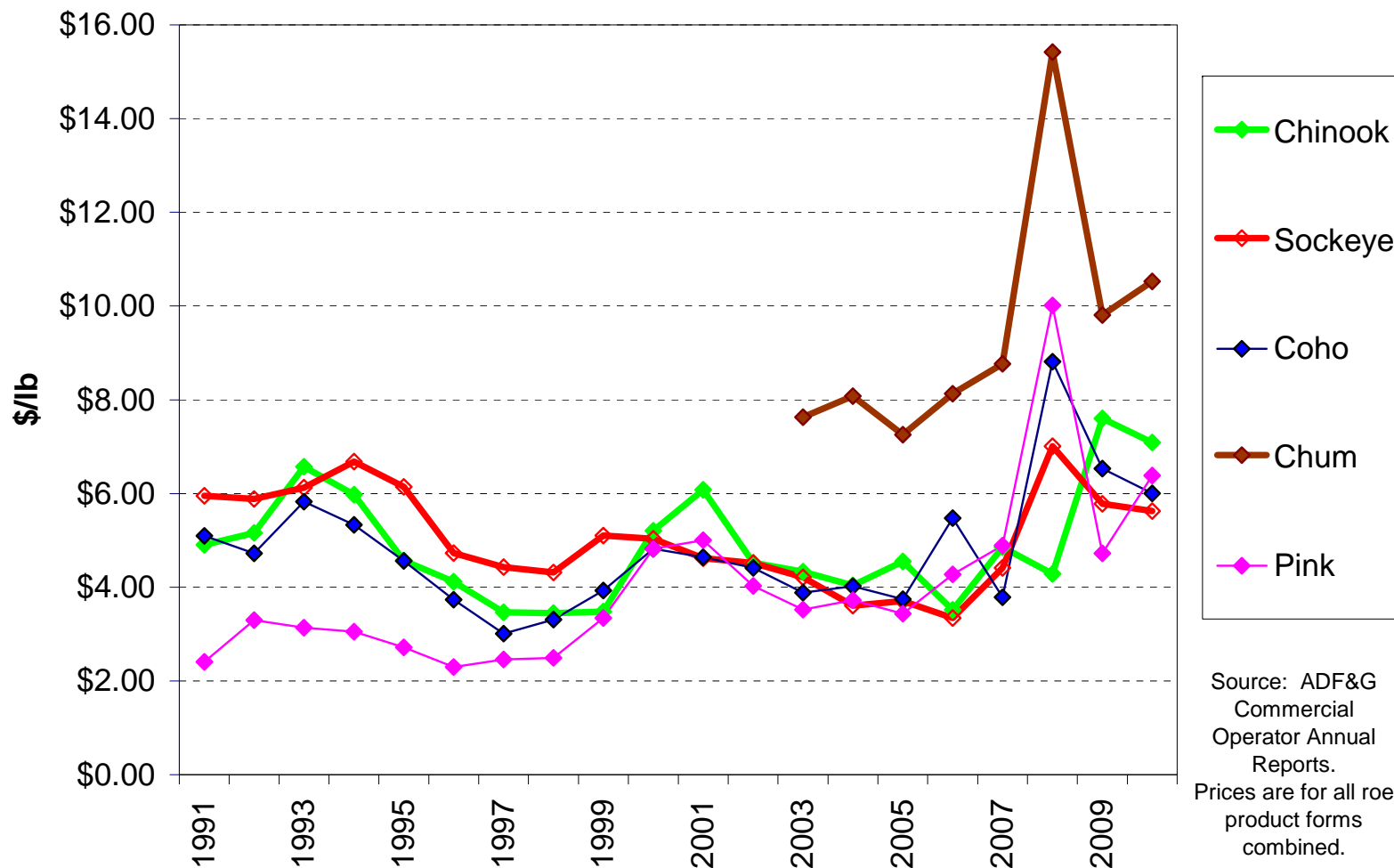
Wholesale prices for frozen, fresh and canned chum salmon
have risen dramatically since the early 2000s.

Average Alaska Salmon Wholesale Prices: Chum
(not adjusted for inflation)



First wholesale prices for Alaska salmon roe exhibit very different trends than first wholesale prices of other products—reflecting the fact that roe is sold in very different end-markets and that wild salmon roe production faces little very competition from farmed salmon. Roe prices spiked in 2008 but have otherwise not increased as dramatically as canned, frozen and fresh prices. Note that chum roe first wholesale prices are much higher than for other species. Roe accounts for a major share of chum salmon total first wholesale value.

Alaska Salmon Roe First Wholesale Prices, by Species
(nominal prices-not adjusted for inflation)

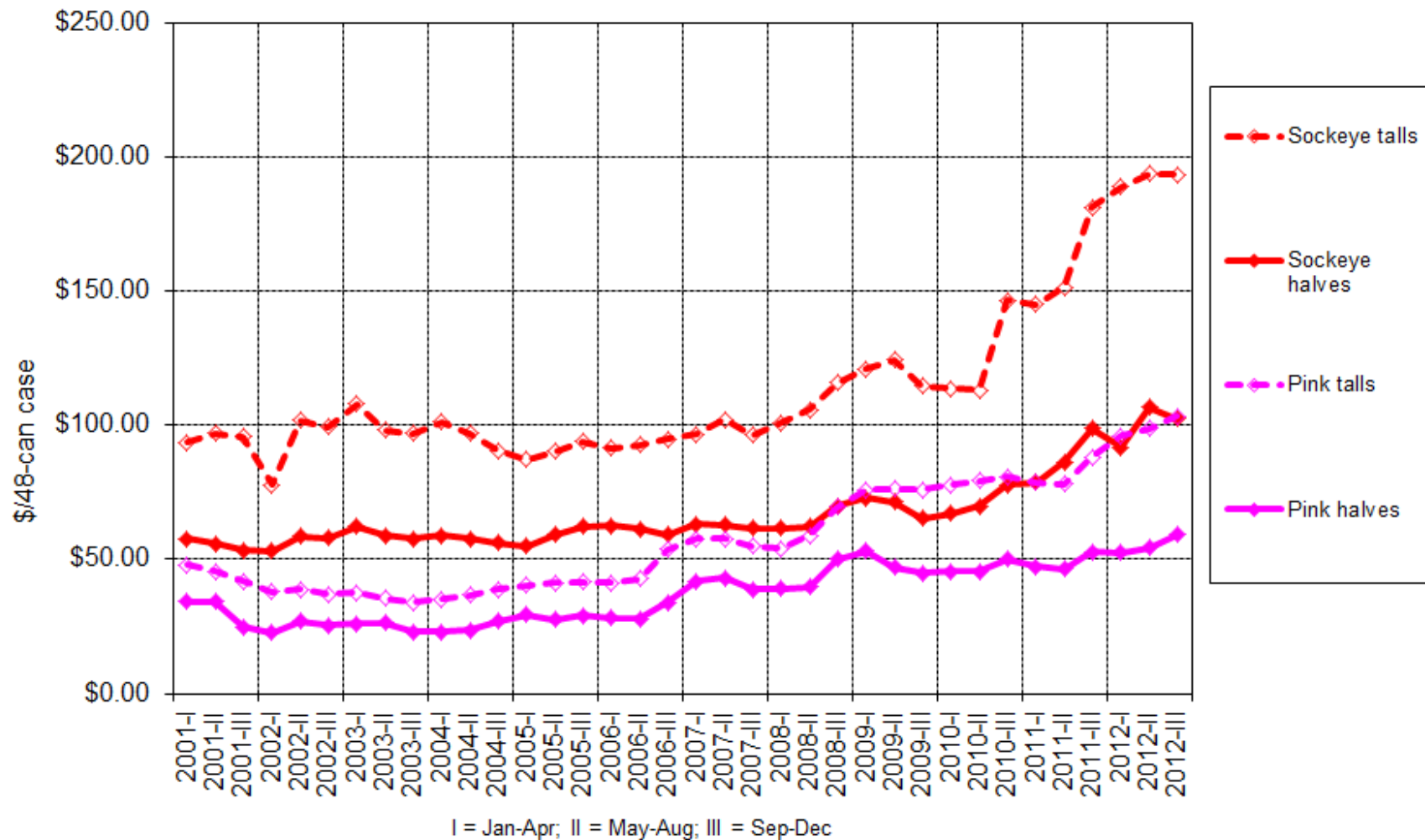


TRENDS IN FIRST WHOLESALE PRICES PAID TO PROCESSORS (continued . . .)

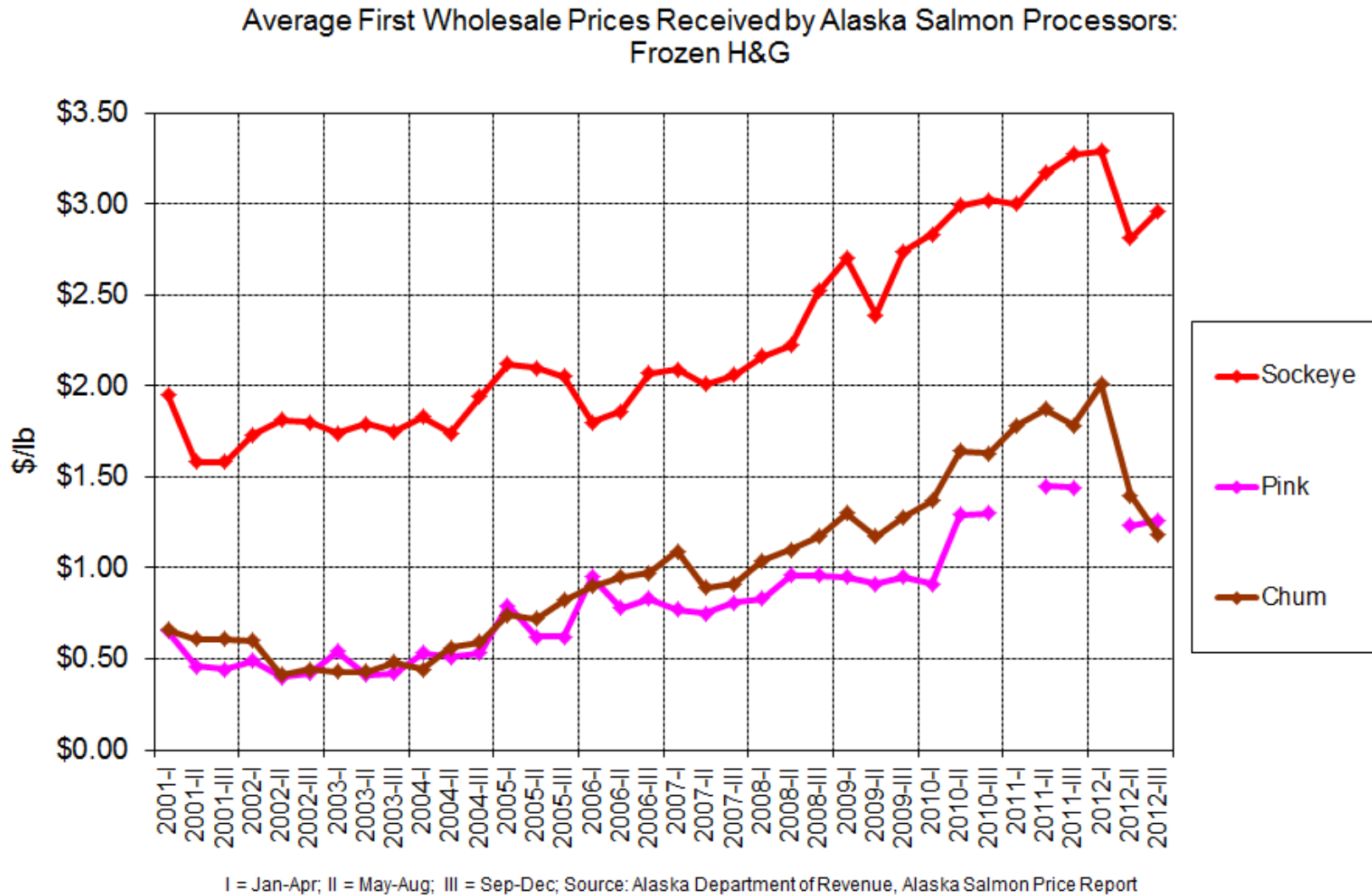
Note: These graphs are based on Alaska Department of Revenue “Salmon Price Reports” data for average prices for three four-month periods per year. The most recent available data are for the period May-August of 2012.

Canned salmon prices have risen dramatically.

**Average First Wholesale Prices Received by Alaska Salmon Processors:
Canned Sockeye and Pink (\$/48-can case)**

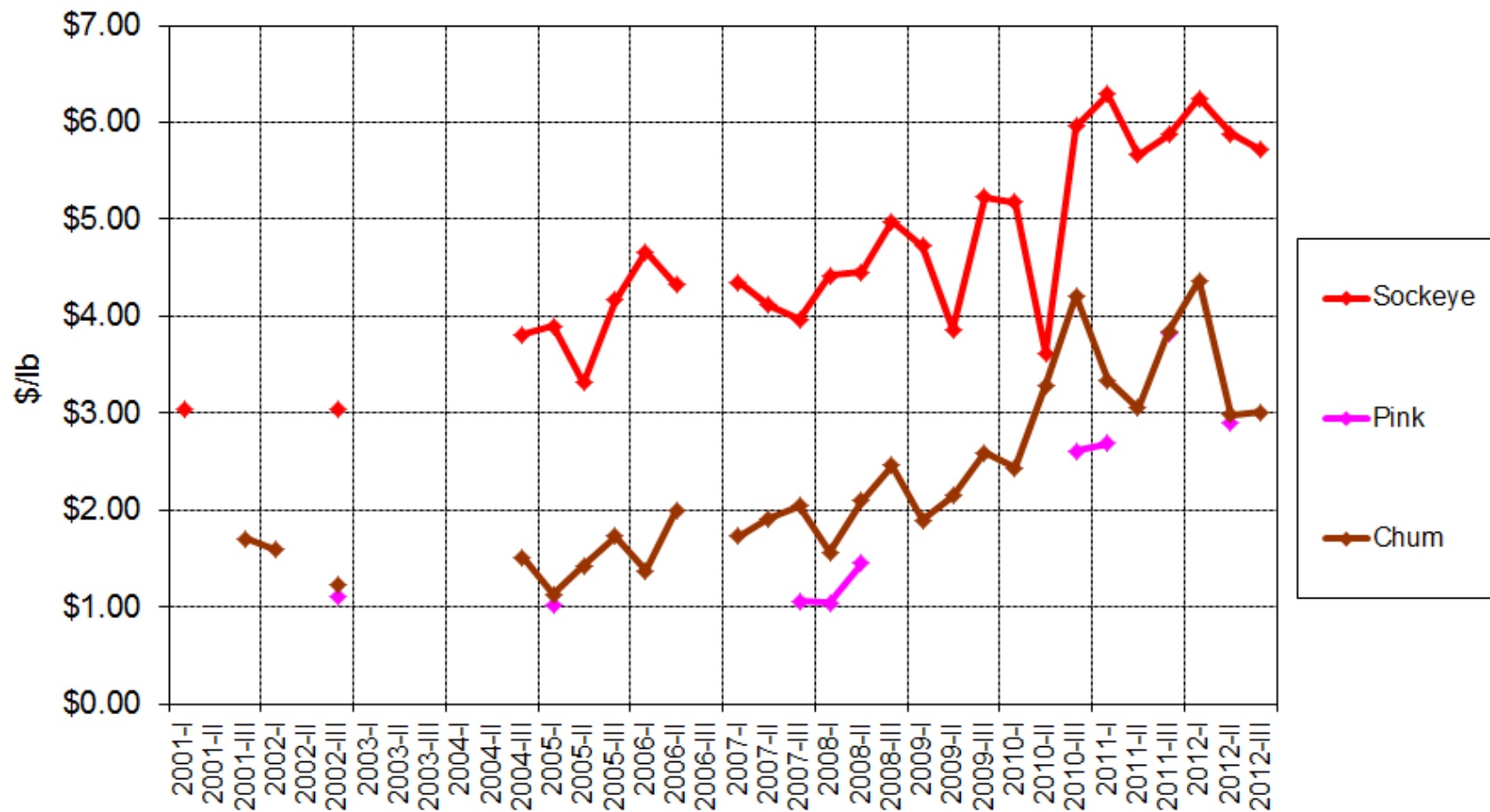


Frozen headed and gutted (H&G) prices have risen dramatically since 2002—but fell in 2012.
Frozen chum salmon prices fell dramatically.



Frozen fillet prices have also risen dramatically since 2002—but also fell in 2012.

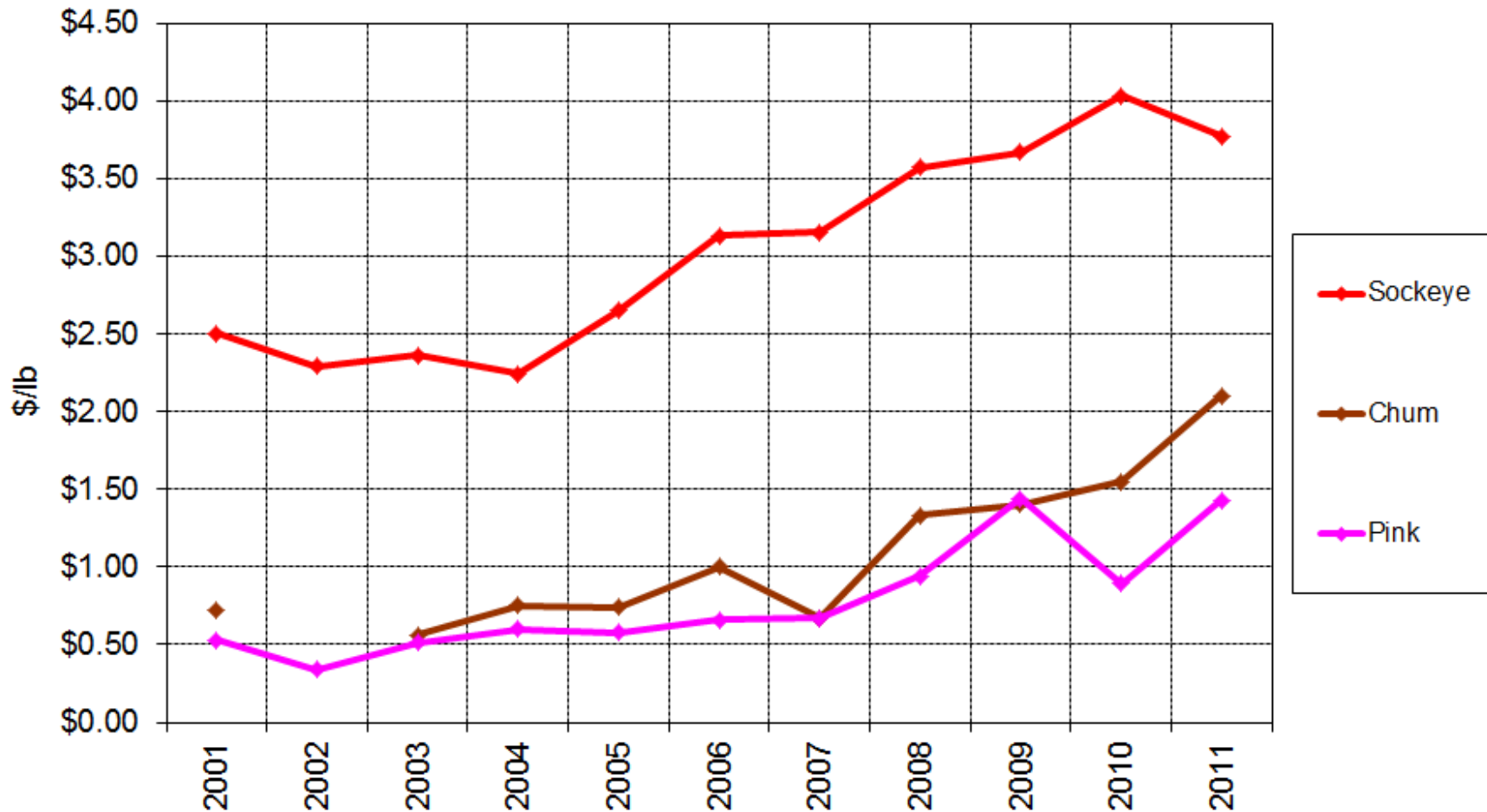
Average First Wholesale Prices Received by Alaska Salmon Processors:
Frozen Fillets



I = Jan-Apr; II = May-Aug; III = Sep-Dec; Source: Alaska Department of Revenue, Alaska Salmon Price Report

Fresh headed and gutted (H&G) prices have risen dramatically since 2002.
Fresh sockeye prices fell in 2012 (but not fresh chum and pink prices).

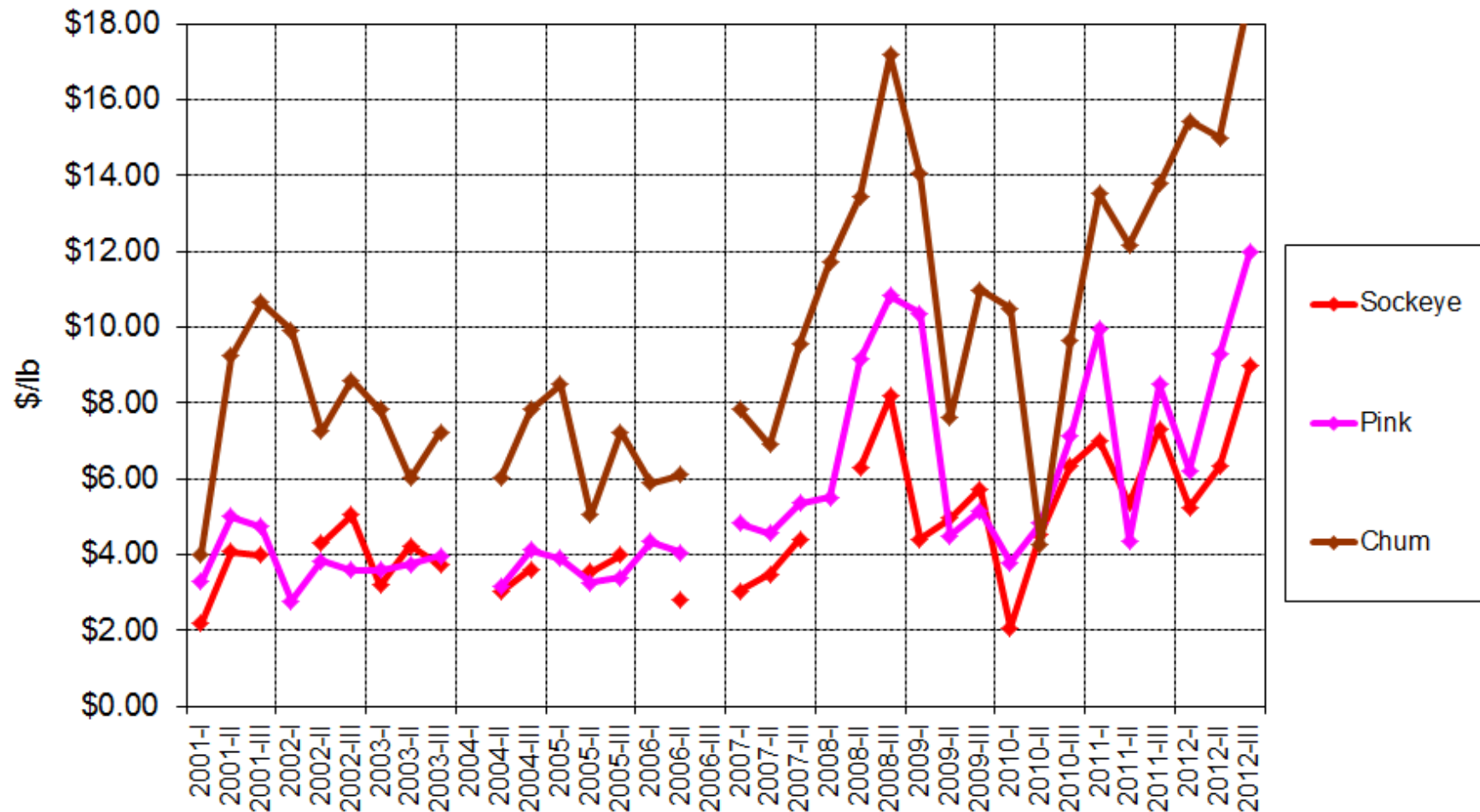
Average First Wholesale Prices Received by Alaska Salmon Processors,
May-August: Fresh H&G



Source: Alaska Department of Revenue, Alaska Salmon Price Reports

The Department of Revenue data also show that Alaska salmon roe exhibit very different wholesale price trends than for other products. Note that roe prices spiked in 2008, 2011 and 2012, and that chum roe wholesale prices are much higher than for other species.

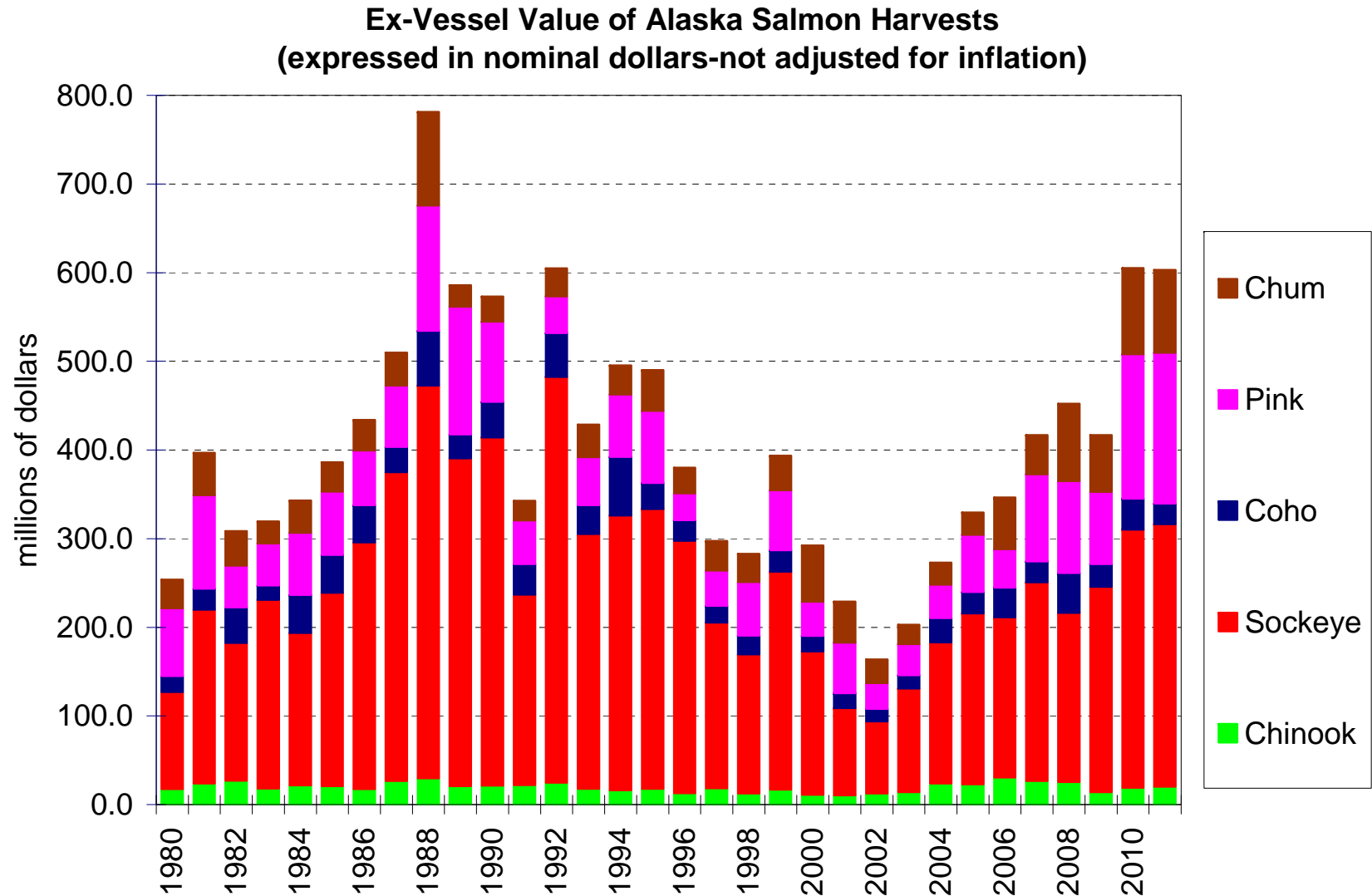
Average First Wholesale Prices Received by Alaska Salmon Processors:
Roe



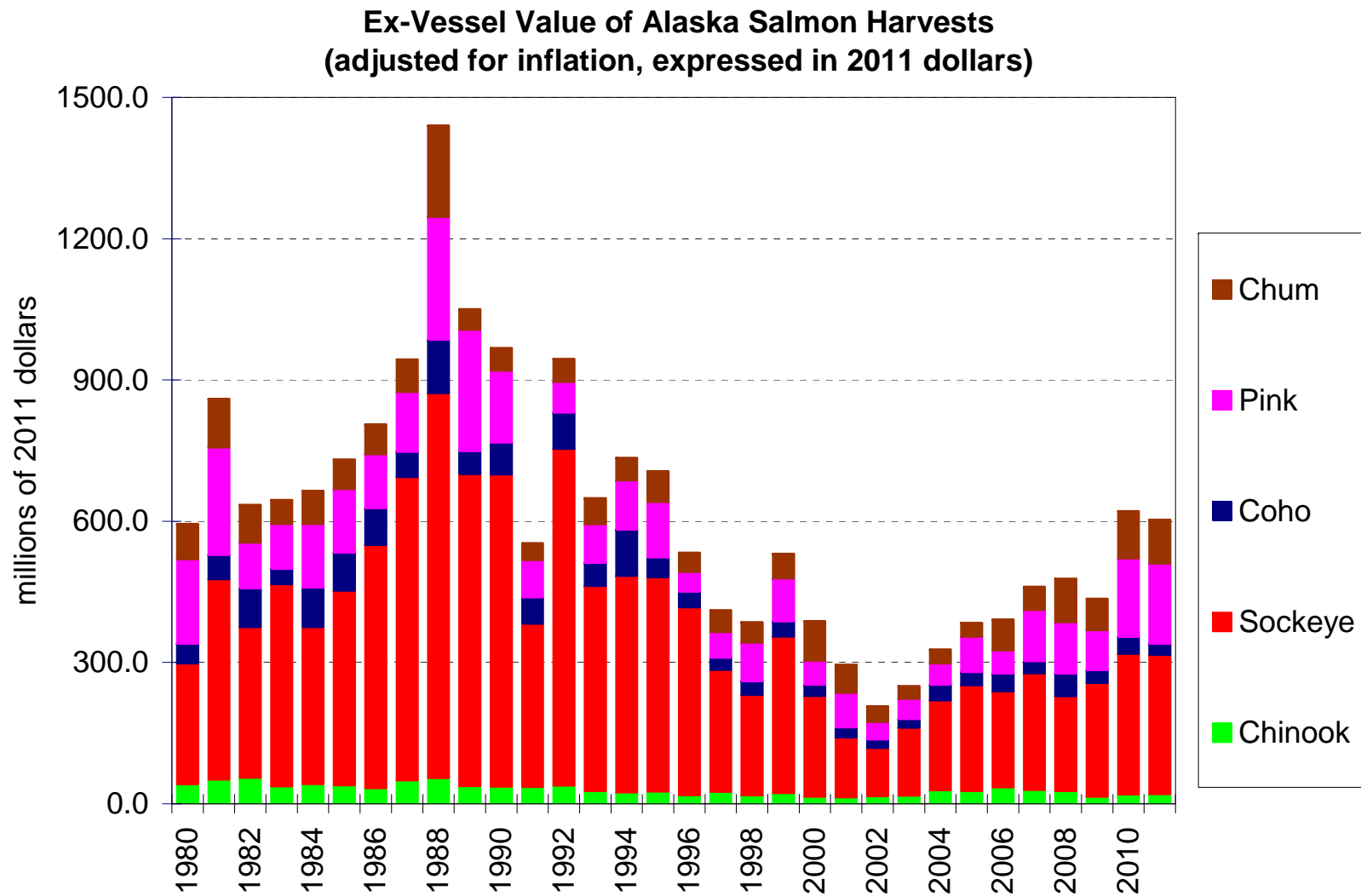
I = Jan-Apr; II = May-Aug; III = Sep-Dec; Source: Alaska Department of Revenue, Alaska Salmon Price Report

TRENDS IN
EX-VESSEL VALUE
OF ALASKA SALMON HARVESTS
(FISHERMEN'S GROSS EARNINGS)

The combined result of strong harvests and a dramatic recovery in prices has been a dramatic recovery in the ex-vessel value of Alaska salmon harvests, from \$164 million in 2002 to \$603 million in 2010.



After adjusting for inflation the recovery in ex-vessel value doesn't appear quite as dramatic—although it is still dramatic and important. Although ex-vessel value has rebounded strongly, it is still well below the inflation-adjusted levels of much of the 1980s.

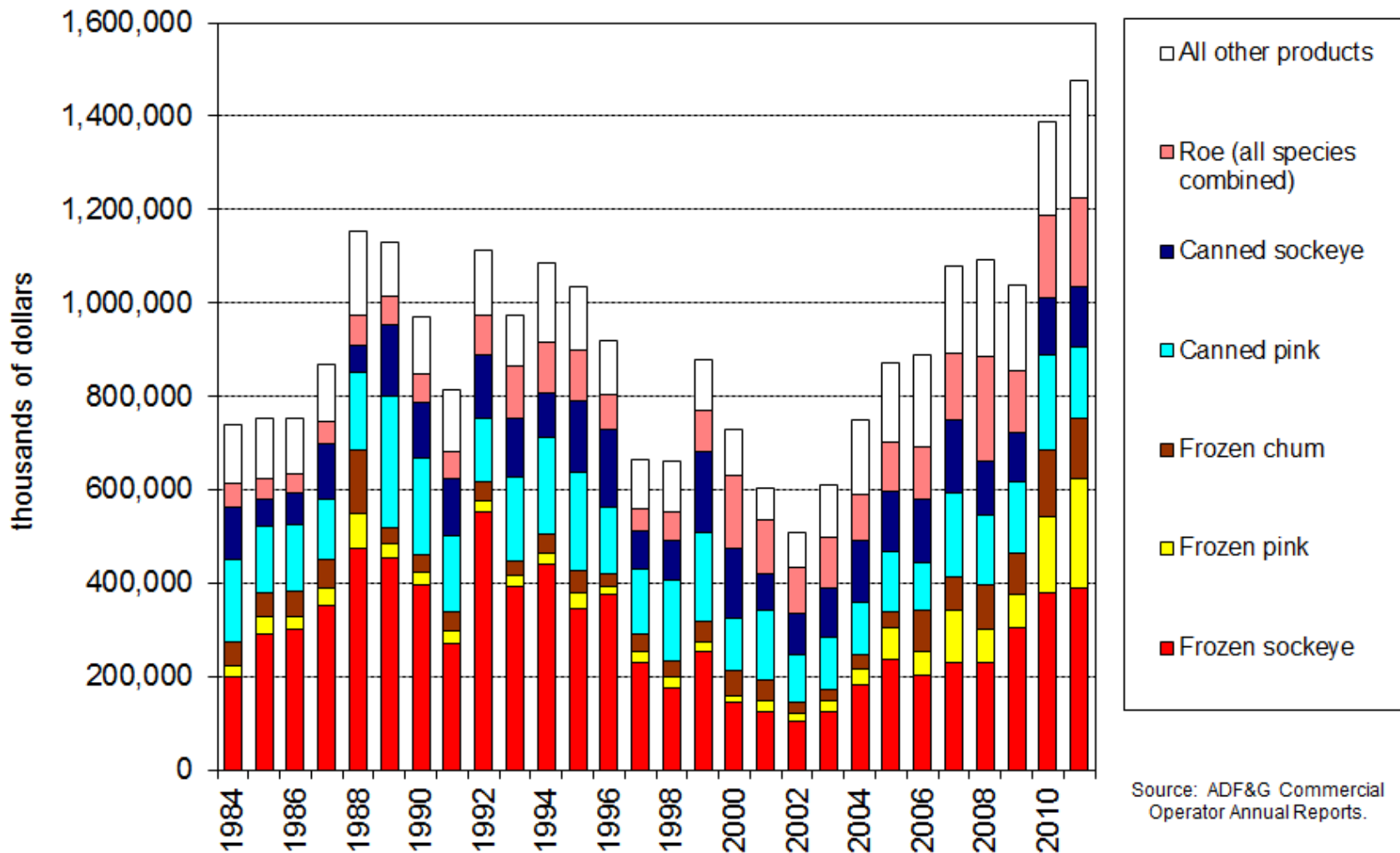


TRENDS IN TOTAL FIRST WHOLESAL VALUE OF ALASKA SAMON PRODUCTION (TOTAL PAYMENTS TO PROCESSORS)

Note: These graphs are based on Commercial Operator Annual Report (COAR) data which are only available through 2011.

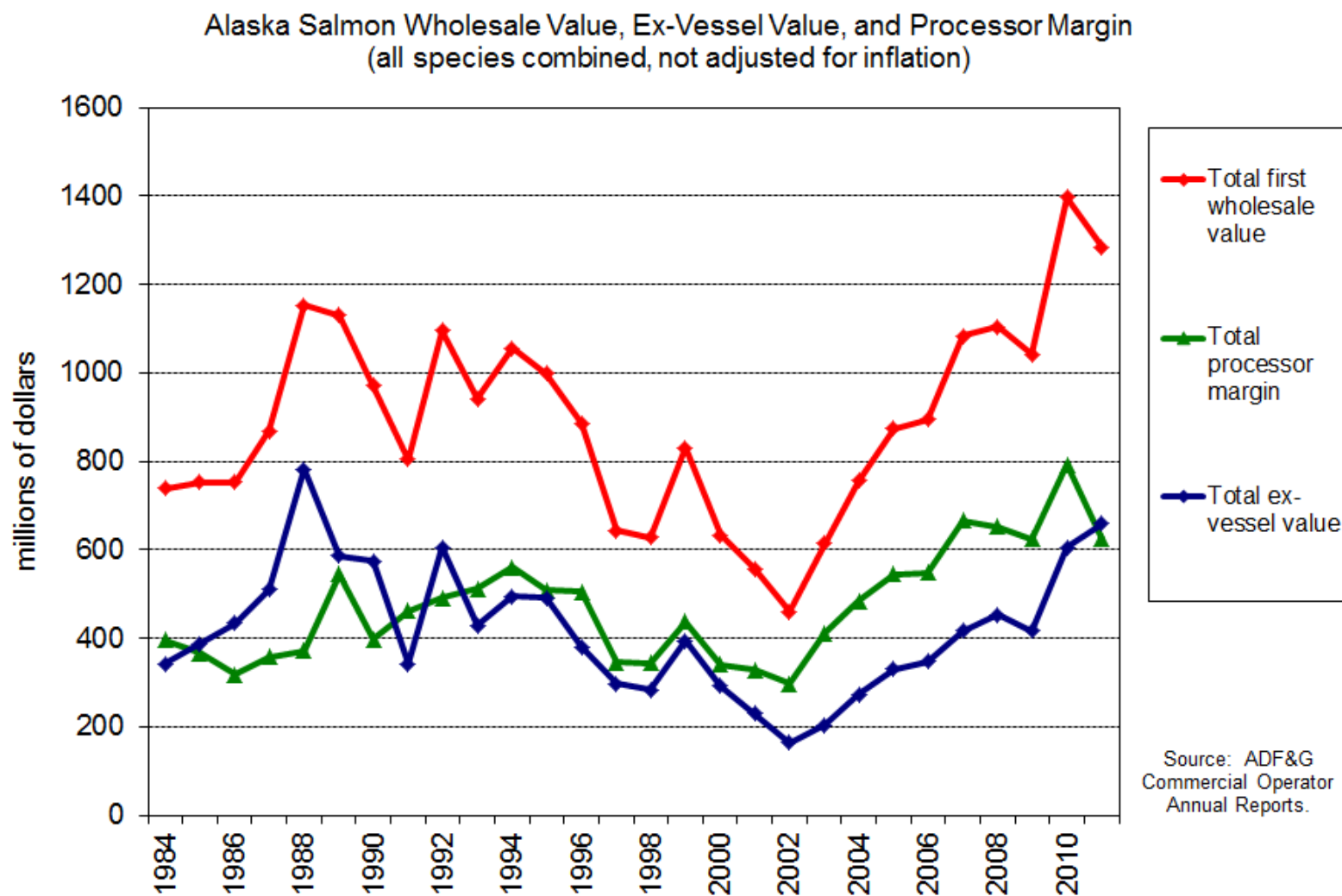
There has been a dramatic increase in the total wholesale value of Alaska production since the early 2000s, from \$466 million in 2002 to \$1.5 billion in 2011. The increase in wholesale value was driven primarily by higher wholesale prices, as well as increased harvests and production of sockeye salmon. Note that salmon roe is an important component of total wholesale value.

First Wholesale Value of Alaska Salmon Production, by Product



Both fishermen and processors have shared in the increase in salmon wholesale prices and value since the early 2000s.

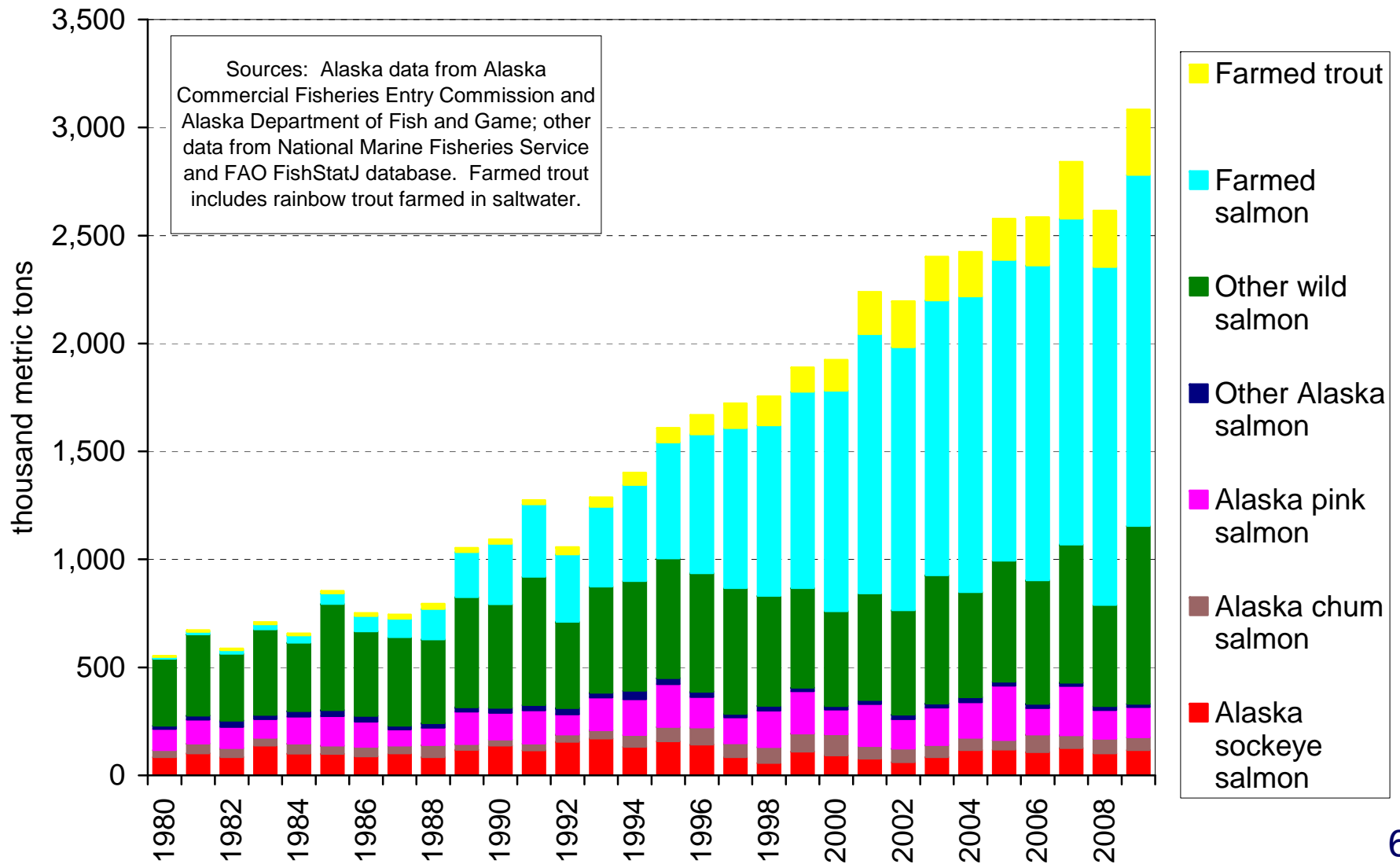
“Processor margin” is my term for the wholesale value of processors’ sales minus the ex-vessel value they pay fishermen. Since the early 2000s, both total processor margin and total ex-vessel value have risen by similar amounts.



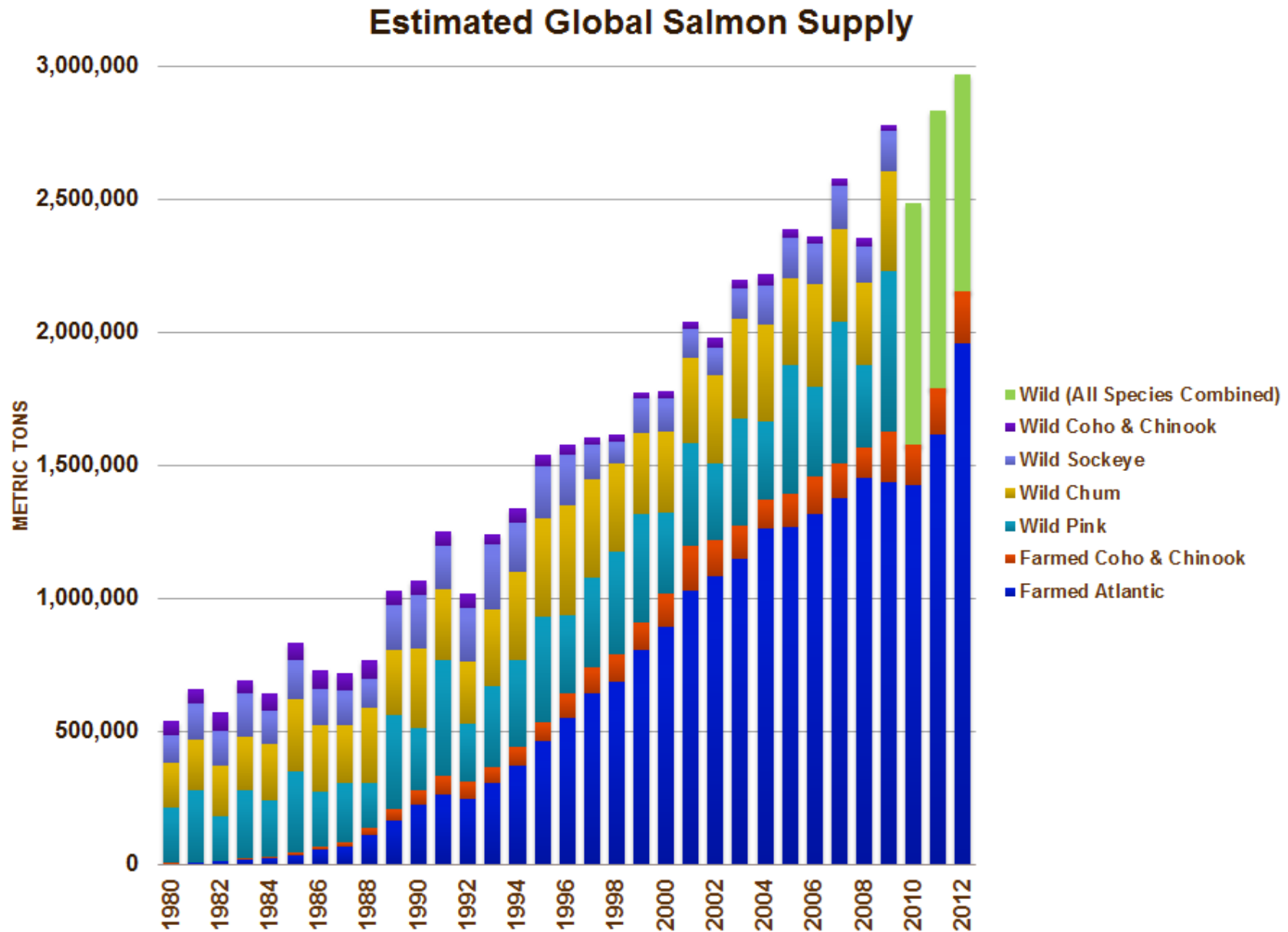
TRENDS IN WORLD SALMON SUPPLY

Alaska has become a relatively small part of total world salmon supply.

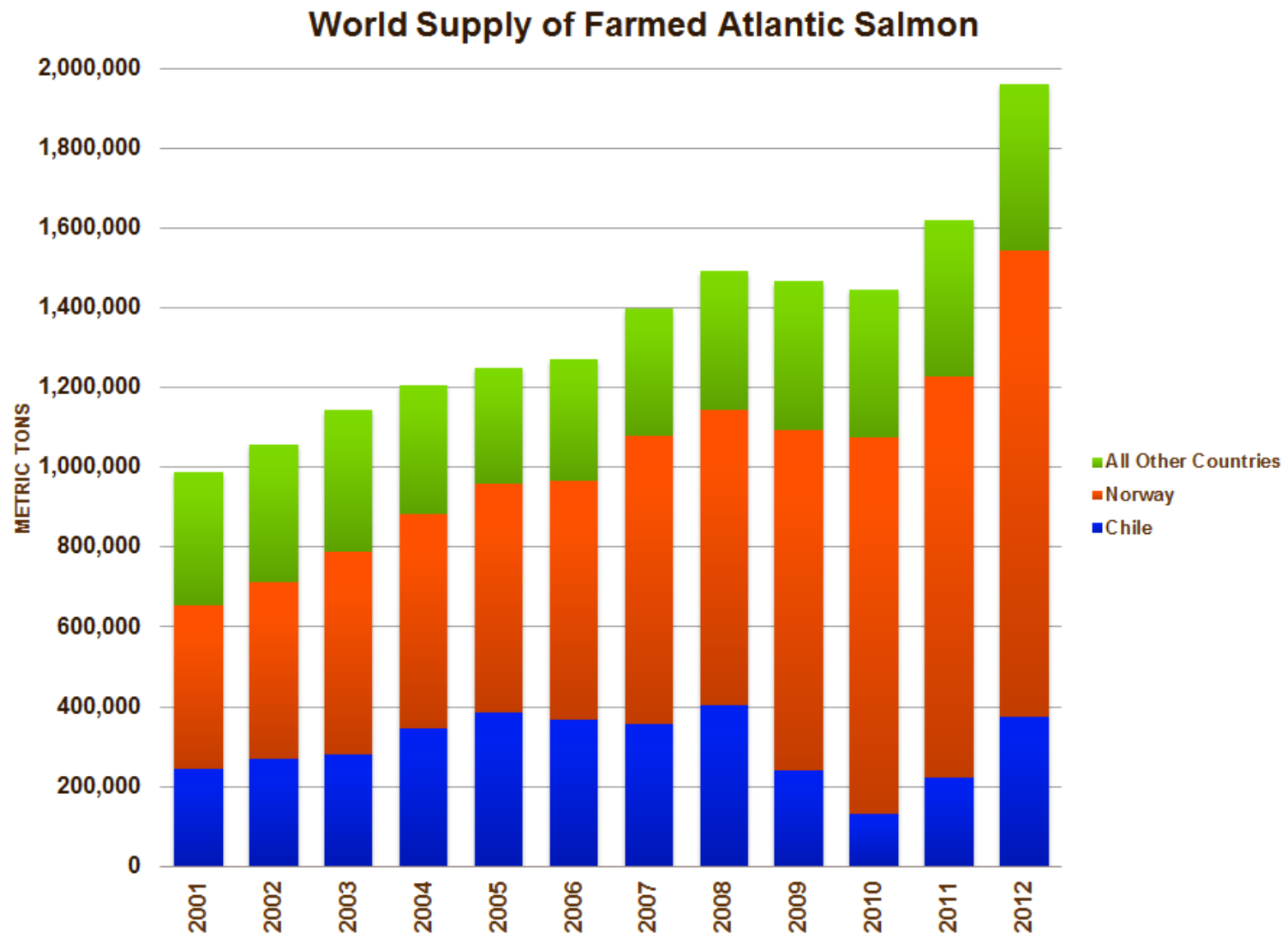
World Salmon Supply: Wild and Farmed



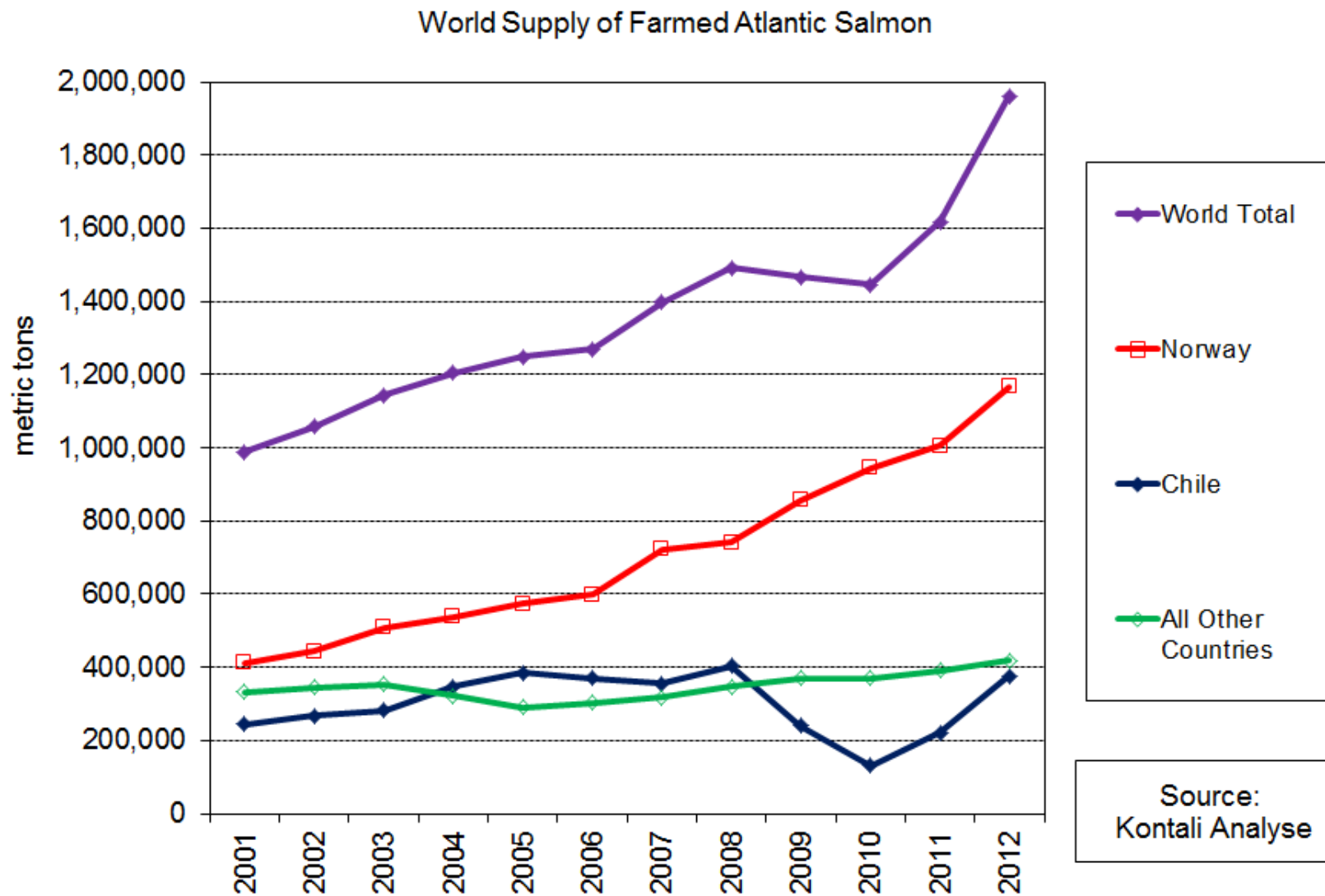
World Salmon Supply, Farmed and Wild, by Species



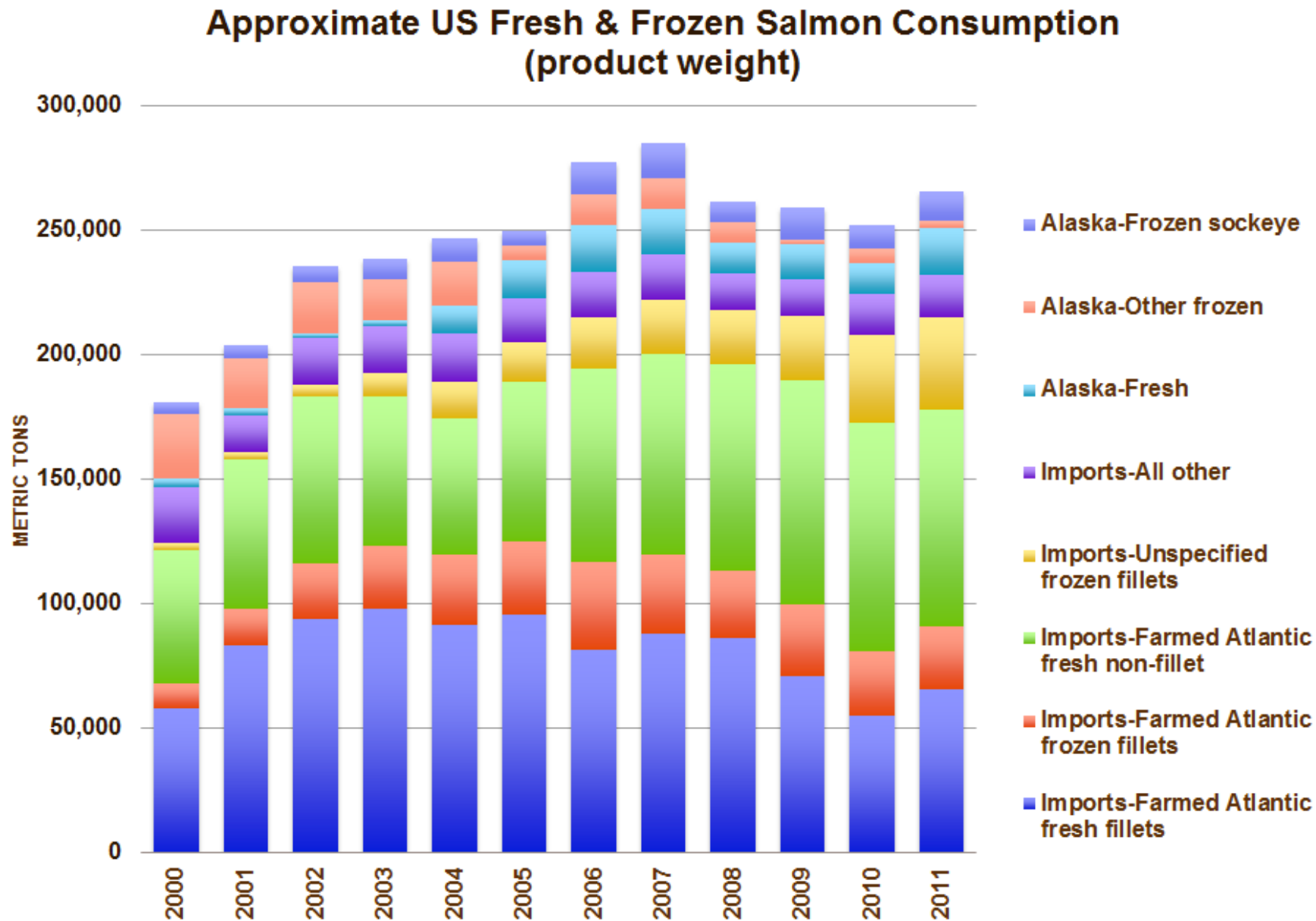
Norway and Chile dominate world farmed Atlantic salmon production. Chilean farmed production declined drastically from 2008 to 2010 due to an outbreak of Infectious Salmon Anemia (ISA). Chilean production rebounded sharply in 2011 and 2012.



Norwegian salmon production has also been growing rapidly!



Alaska wild salmon accounts for less than one-third of US fresh and frozen salmon consumptions.





Thousand tons WFE

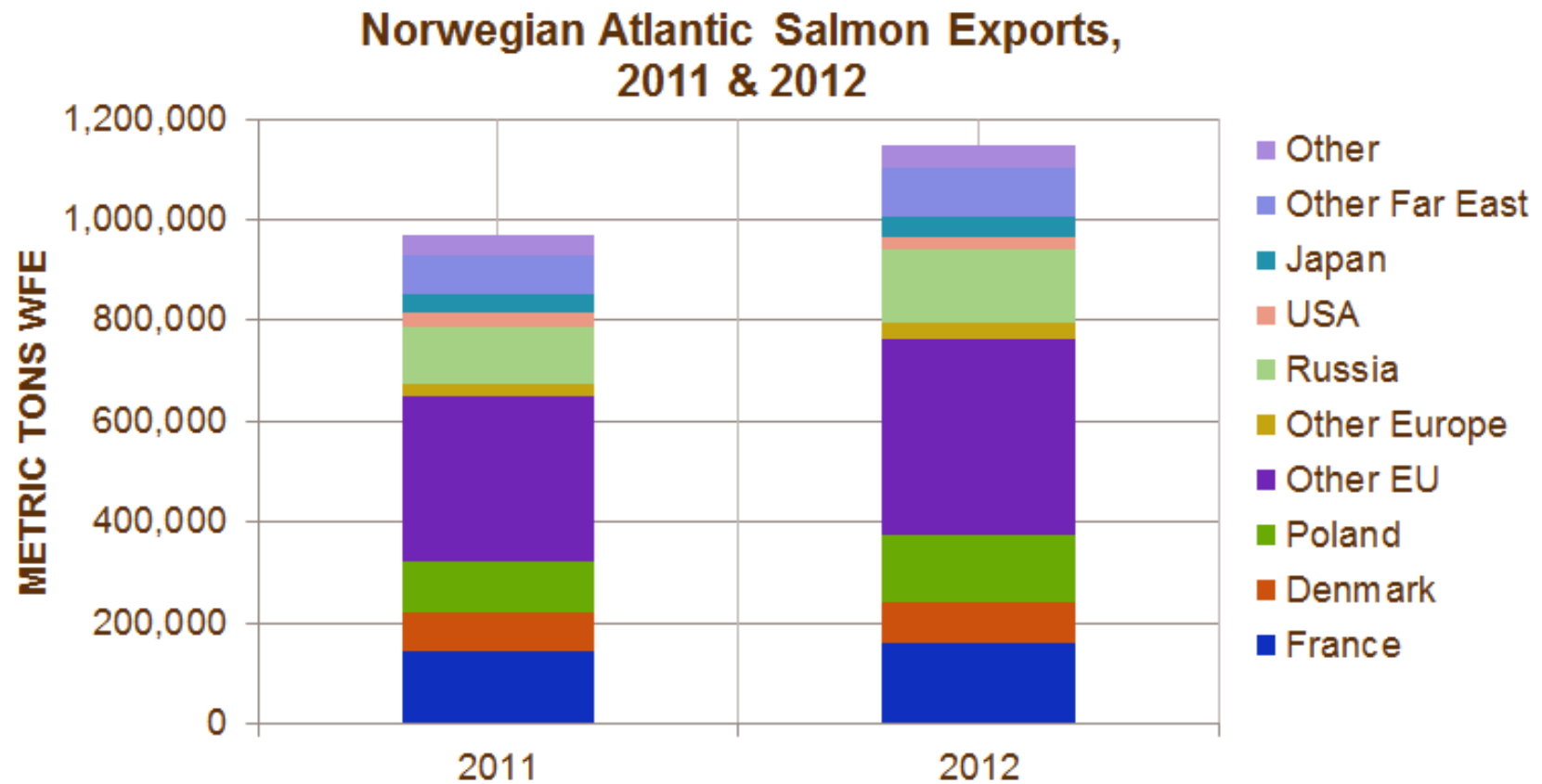
Russia up from 12 to 147
South America up from 8 to 45

As farmed Atlantic salmon production has grown, end markets have diversified dramatically

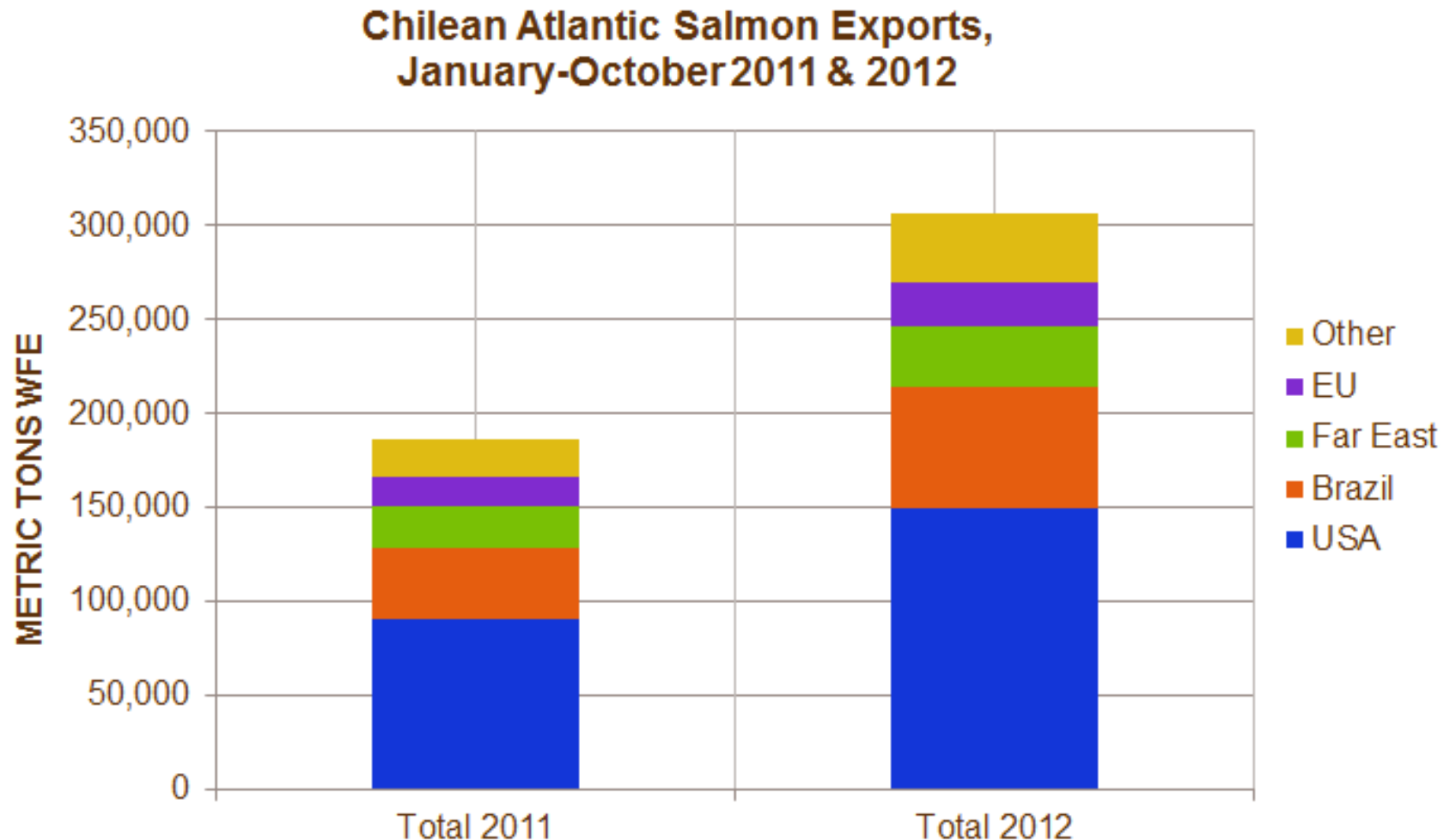


Source: ABG Sundal Collier, June 2012, as used in a presentation by Aquachile

As Norwegian farmed salmon production has grown, Norway has dramatically diversified its markets.

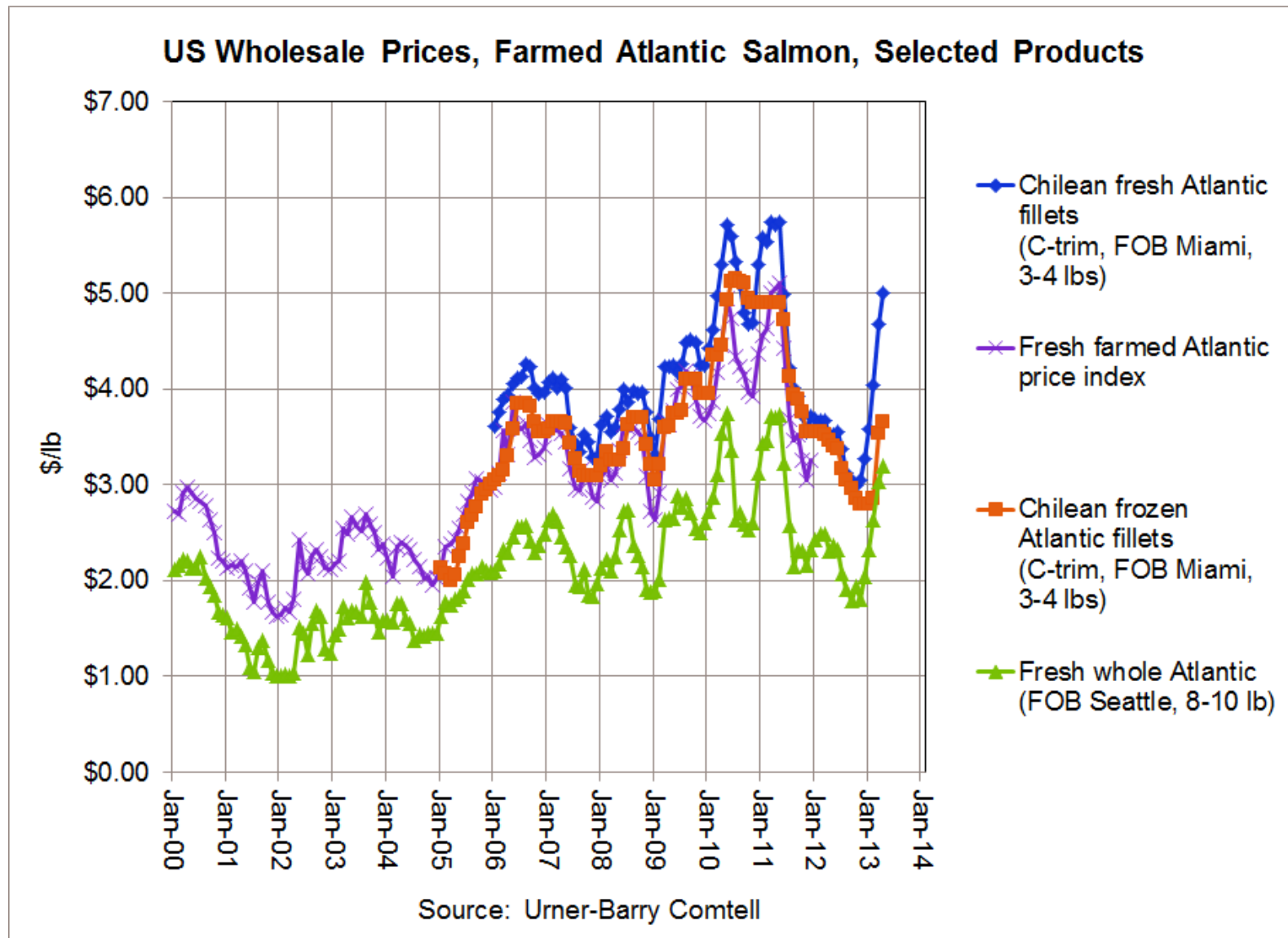


Chile has also diversified its markets. In recent years, Brazil has become a major new market for Chilean salmon (partly because of Brazil's very large population of Japanese origin).

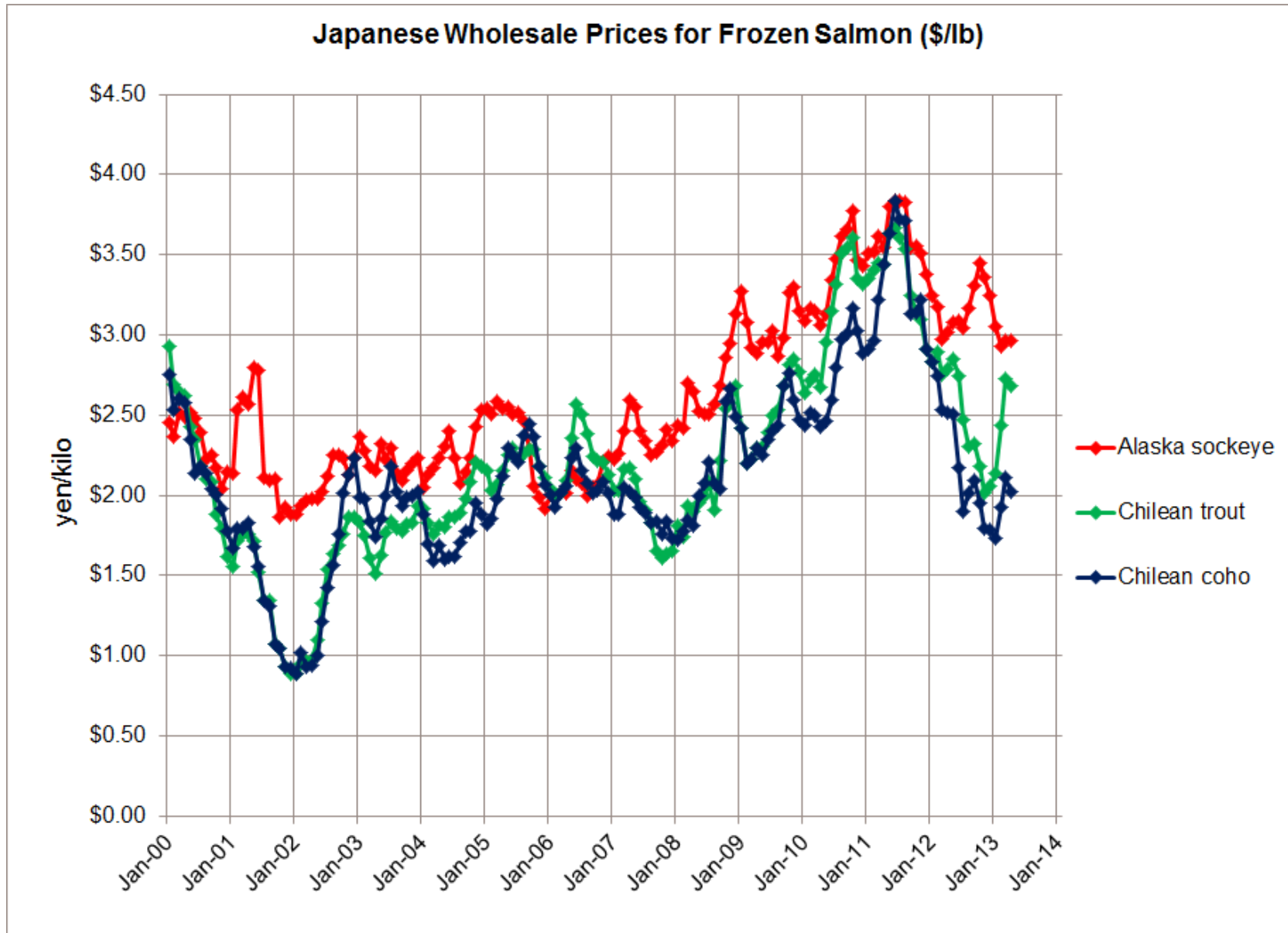


TRENDS IN FARMED SALMON PRICES

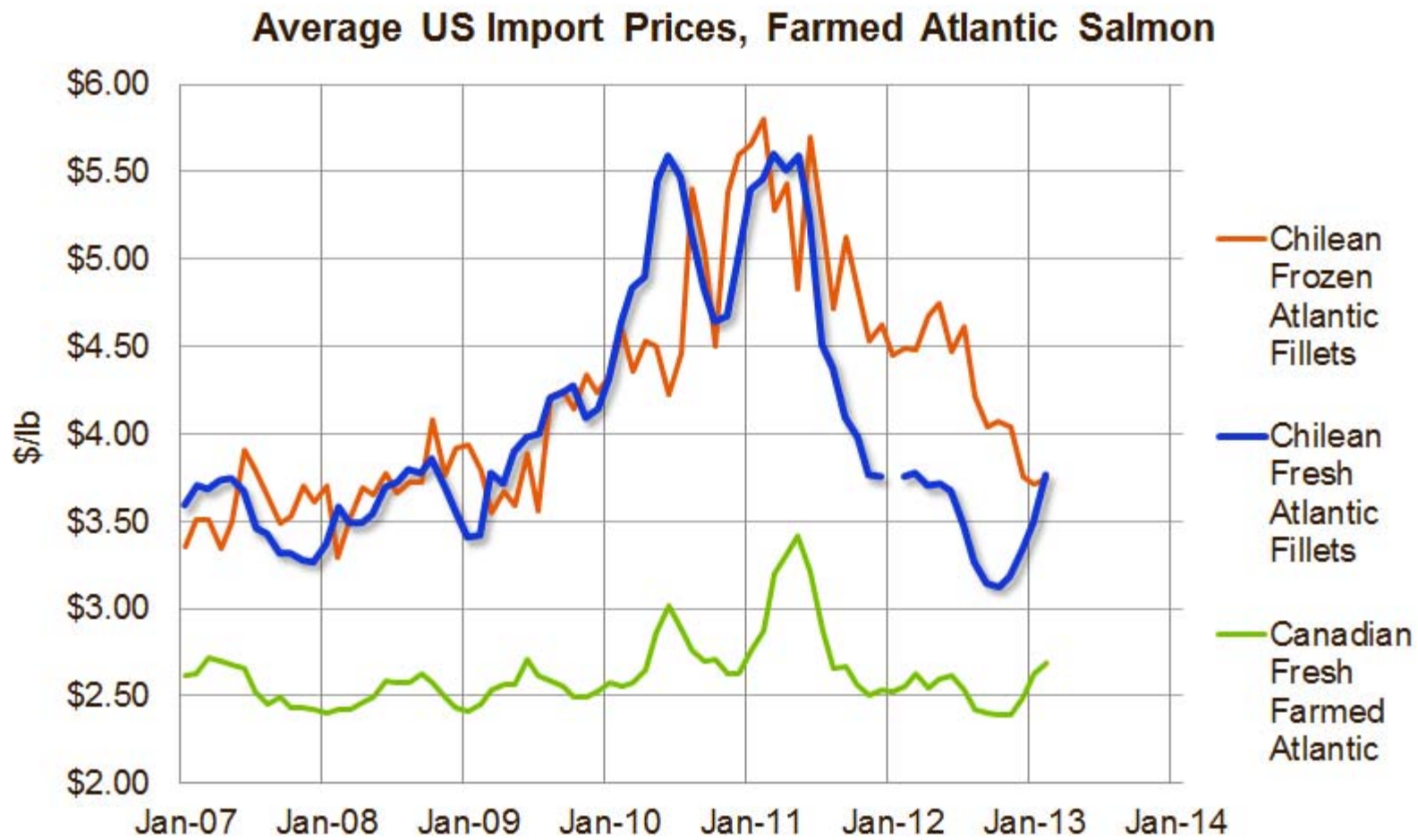
It wasn't only wild salmon prices that increased over the past decade. Farmed salmon prices were also rising for most of the decade.



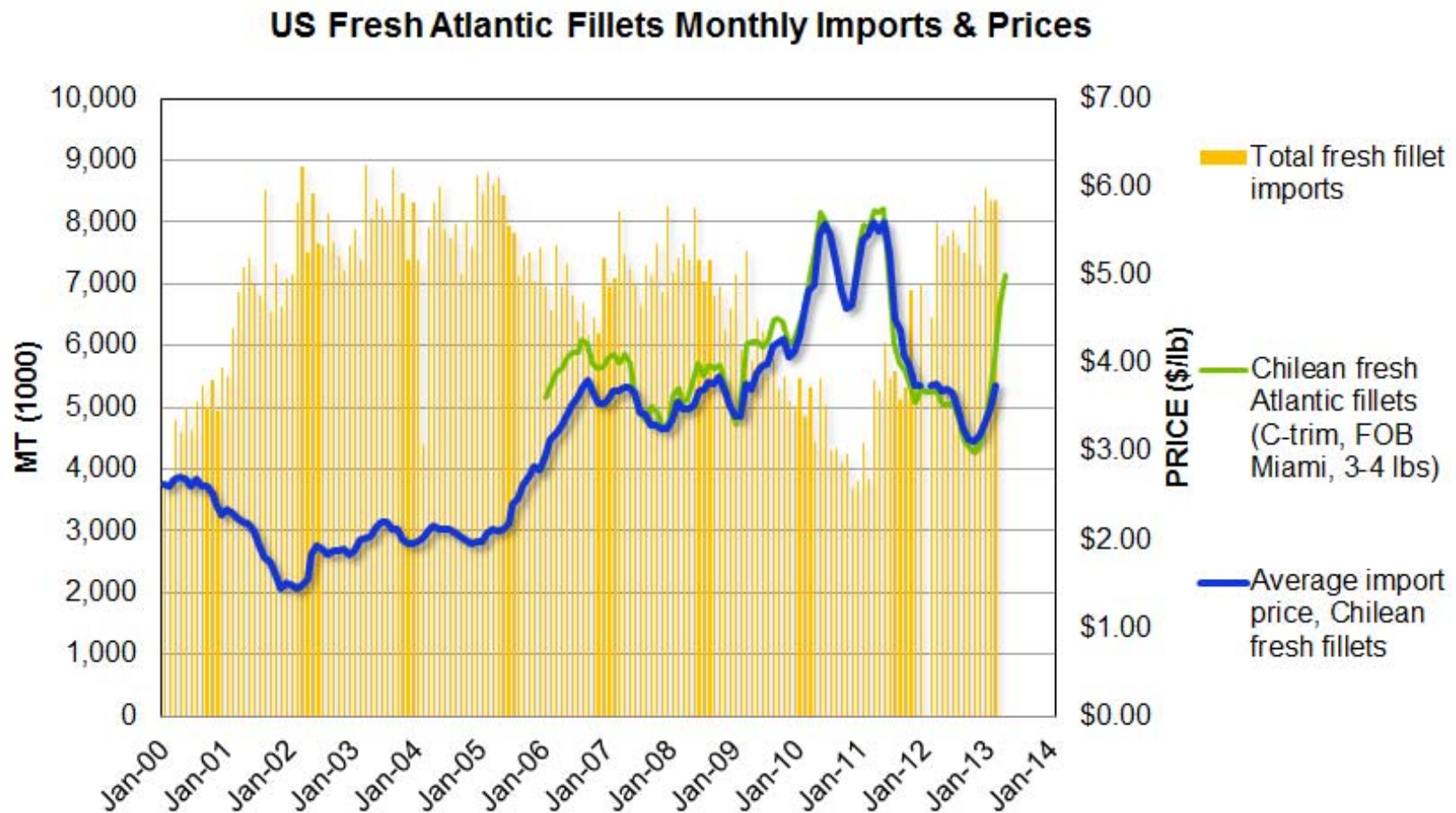
Wholesale prices were also rising in Japan for most of the decade
(in dollar terms)



World farmed Atlantic salmon prices spiked in 2010 and 2011 due to the downturn in supply—but then fell sharply as supply increased again. Since September prices have been rising again sharply.



There has been a clear inverse relationship between US Atlantic salmon fillet imports and prices.



FACTORS AFFECTING ALASKA SALMON PRICES

What explains the dramatic recovery in Alaska salmon prices since 2002?

- Partly things the Alaska salmon industry has done:
 - Sustained effective marketing
 - Effective niche marketing
 - Development of new markets
 - New product forms
 - Improved quality
- Partly other things happening in world salmon markets
 - Greatly expanded world salmon demand
 - Shortfall in farmed salmon supply due to Chilean disease problems

Things the Alaska salmon industry has done:
Sustained effective marketing . . .



It's a known fact that if you grow up in Alaska
you'll be stronger, healthier and better looking.
(especially if you're a salmon)

Alaska Salmon
Naturally a World Apart

In Alaska's pure, icy waters, salmon naturally develop firmer meat that's rich in Omega-3 oils, great tasting, and much more attractive to your customer. For easy menuing and merchandising ideas with Alaska Salmon, call: **1-800-806-2497** or visit our web site: www.alaskaseafood.org.

The advertisement features a photograph of two young boys on a fishing boat. The boy on the left is wearing an orange raincoat and holding a large salmon. The boy on the right is wearing a yellow raincoat and also holding a large salmon. In the bottom right corner, there are two logos: the Alaska Seafood Council logo and the Alaska Seafood logo.

Things the Alaska salmon industry has done:
Effective niche marketing . . .

V4

THE WASHINGTON POST

The Salmon's Sky-High This Year

By WALTER NICHOLLS
Washington Post Staff Writer

Washingtonians who wait all year for wild Copper River king salmon from Alaska are paying for the privilege — assuming they can even find the prized fish in stores or restaurants.

Specialty fish markets are charging \$5 more per pound than they did last year. At M. Slavin & Sons in Arlington, Copper River king salmon is selling for \$28.95 per pound; at River Falls Seafood in Potomac, it's \$29.99 per pound, up from \$24.99 per pound last year. For the time being, supermarkets are carrying the less expensive sockeye variety.

At Oceanaire Seafood Room downtown, an entree of the rich, oily Copper River fish is \$53.95, up from \$32 five years ago. "We're just



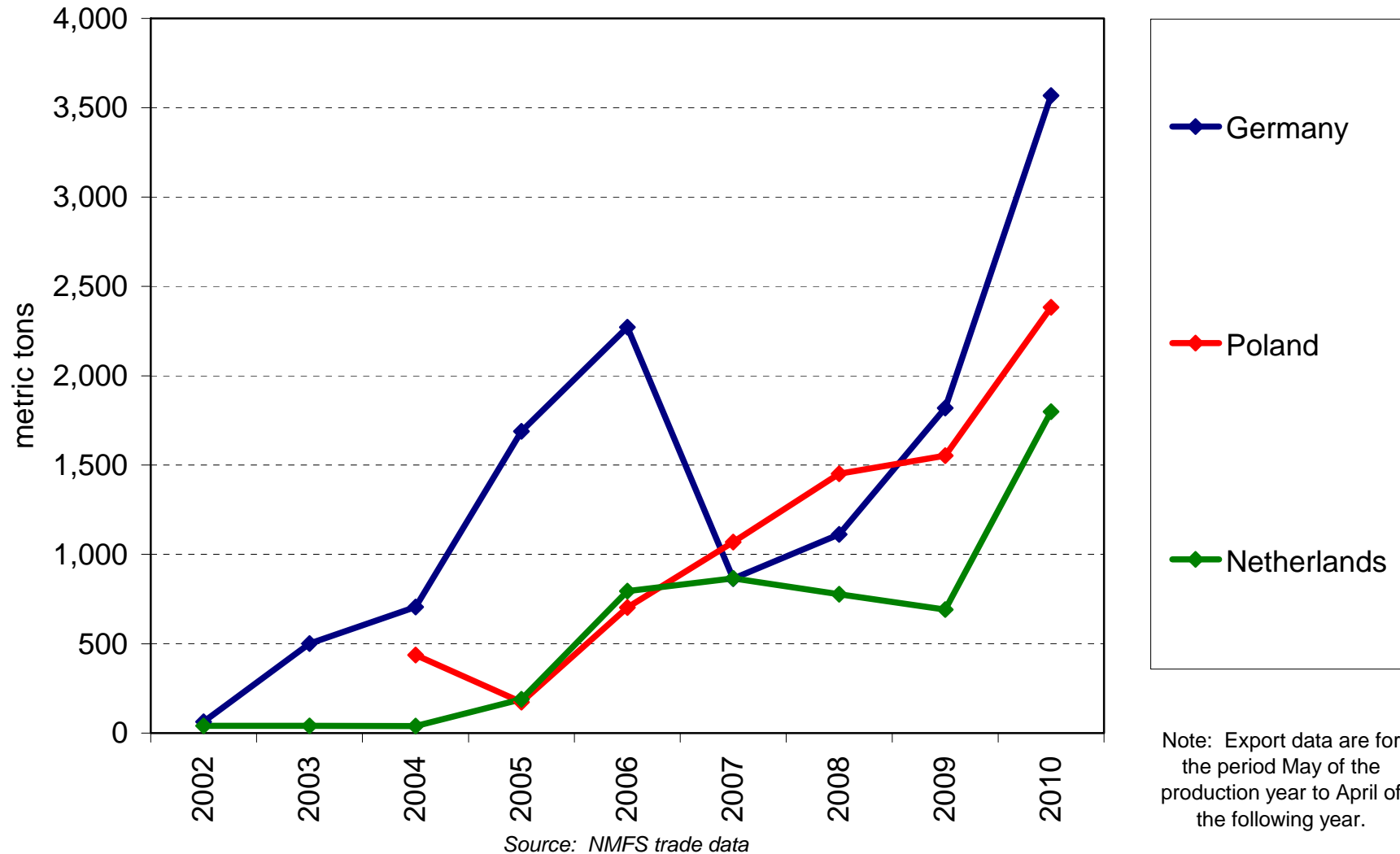
BY PAUL JOSEPH BROWN — SEATTLE POST-INTELLIGENCER VIA ASSOCIATED PRESS

The first shipment of Copper River salmon (a 45-pounder) gets red-carpet treatment from Alaska Airlines cargo manager Matt Yerbic, center, at the Seattle-Tacoma International Airport.

Washington Post, May 31, 2006

Things the Alaska salmon industry has done: Diversification of markets and development of new markets . . .

Alaska Frozen Sockeye Exports to Selected European Countries, 2002-2010

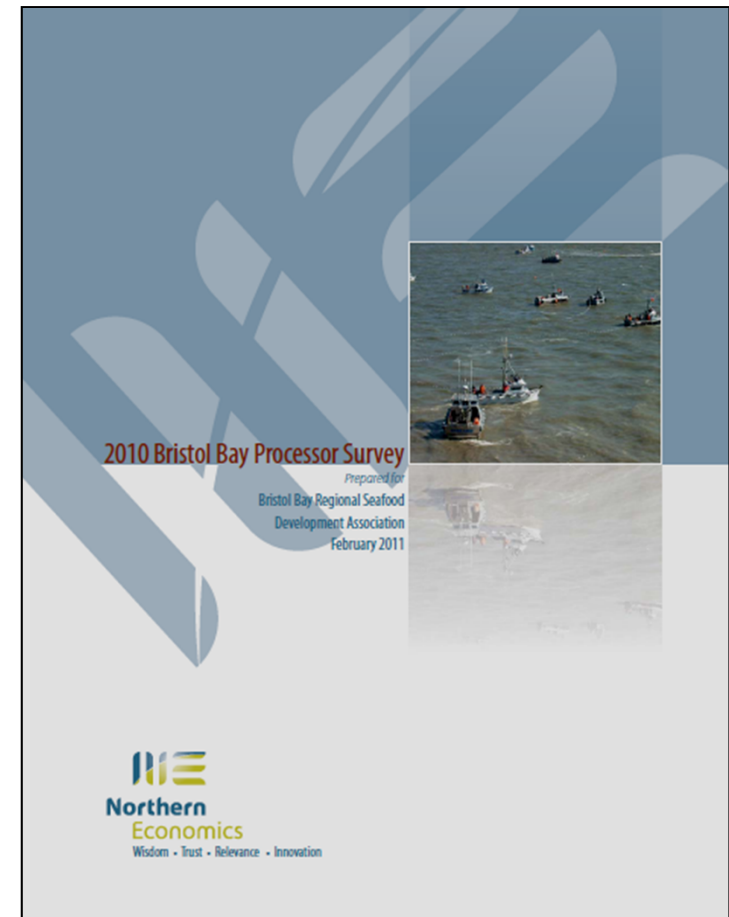


Things the Alaska salmon industry has done:
New product forms . . .



Wild sockeye fillet

Things the Alaska salmon industry has done:
Improved quality . . .



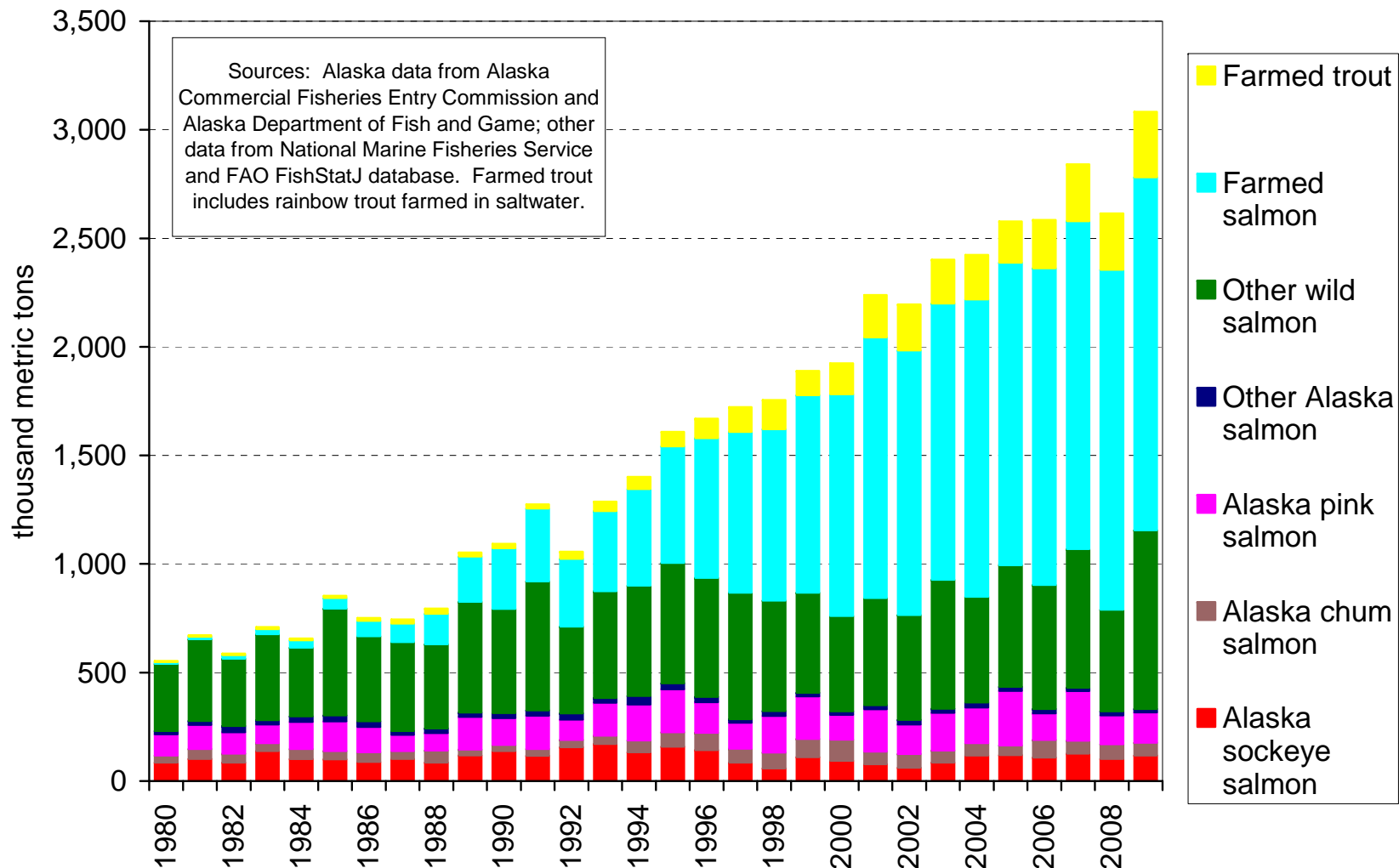
Drift Fleet Raw Product Purchases, 2008-2010

Product	2008		2009		2010	
	Round Pounds	Percent of Total	Round Pounds	Percent of Total	Round Pounds	Percent of Total
Chilled	32.5	24%	60.0	40%	63.4	47%
Unchilled	102.2	76%	91.7	60%	72.6	53%
Total	134.7	100%	151.7	100%	136.0	100%

Source: Northern Economics, Inc. 2010

But Alaska salmon prices are affected by more than what the Alaska industry has done.
Alaska has become a relatively small part of total world salmon supply.
Alaska salmon prices are significantly affected by
global supply and demand conditions which influence prices for all salmon.

World Salmon Supply: Wild and Farmed



Wild salmon competes with farmed salmon in world markets

- Rapidly growing farmed salmon production glutted world markets in the 1990s and drove prices down for both farmed and wild salmon.
- When farmed salmon prices fell in the 1990s, wild salmon prices fell too, because buyers had cheap alternatives to wild salmon
- After 2002 prices rose for both farmed and wild salmon, because
 - World demand for salmon grew rapidly
 - Growth in world farmed salmon production slowed
 - Chile experienced major production declines due to disease.
- When farmed salmon prices rose between 2002 and 2011, wild salmon prices rose too, because buyers didn't have cheap alternatives to wild salmon

But Alaska wild salmon is different and better than farmed salmon!
Why should farmed salmon prices have any effect on wild salmon ??!!??

- Not everyone knows or thinks that wild salmon is different and better than farmed salmon
- What matters for wild salmon prices is not what the first and most loyal customers think and are willing to pay, but what the last and least loyal customers think and are willing to pay
- Even if a competitor's product is different and not as good as yours, that doesn't mean it doesn't affect your prices
 - If your competitor's product gets cheaper, you have to lower your prices or some of your customers will switch
 - If your competitor's product gets more expensive, you can raise your prices without losing customers
- The many things the Alaska salmon industry has done to strengthen markets since 2002 have helped to increase the premium that Alaska salmon commands over farmed salmon (or reduce the discount that Alaska salmon is priced at, depending on the species and product).
- But they have not made Alaska salmon prices fully independent of farmed salmon prices.
- Important exceptions are markets in which farmed salmon does not compete significantly with Alaska salmon:
 - Canned salmon markets
 - Roe markets

One of the most important reasons for the increase in both farmed and wild salmon prices over the past decade was that world demand for salmon was growing faster than world supply.

- Rapid demand growth due to:
 - Development of new geographic markets (Russia, Brazil, China, etc.)
 - Growing incomes in new markets
 - Development of new product forms
 - Sale of products from more types of retail outlets
 - Shifting consumer tastes
 - Growing familiarity with salmon
 - Health benefits
- Slower supply growth due to:
 - Wild supply limited by nature
 - Drastic drop in Chilean farmed Atlantic production due to disease
 - Higher feed costs

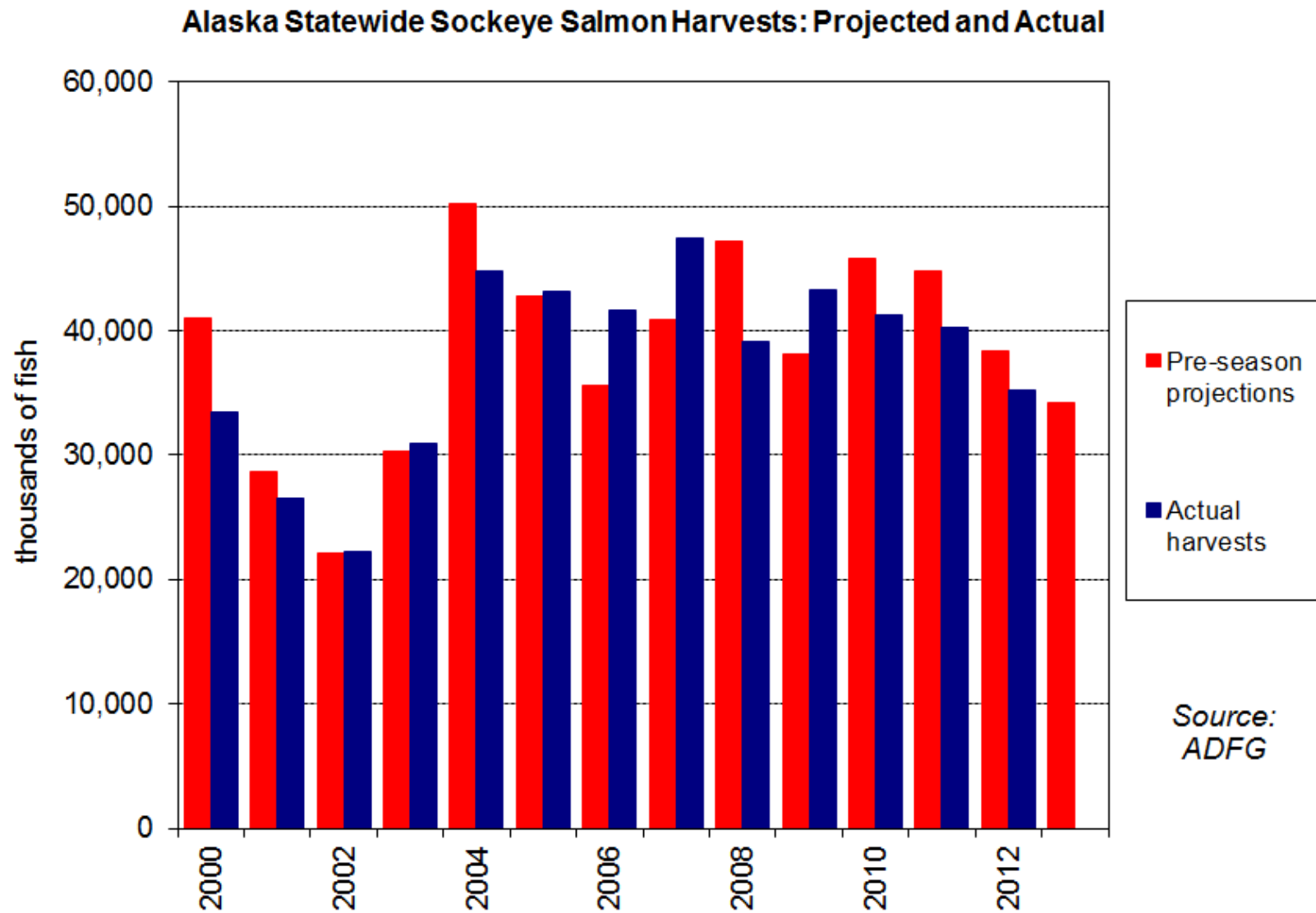
FUTURE OUTLOOK FOR ALASKA SALMON MARKETS

Short-term outlook for Alaska salmon markets

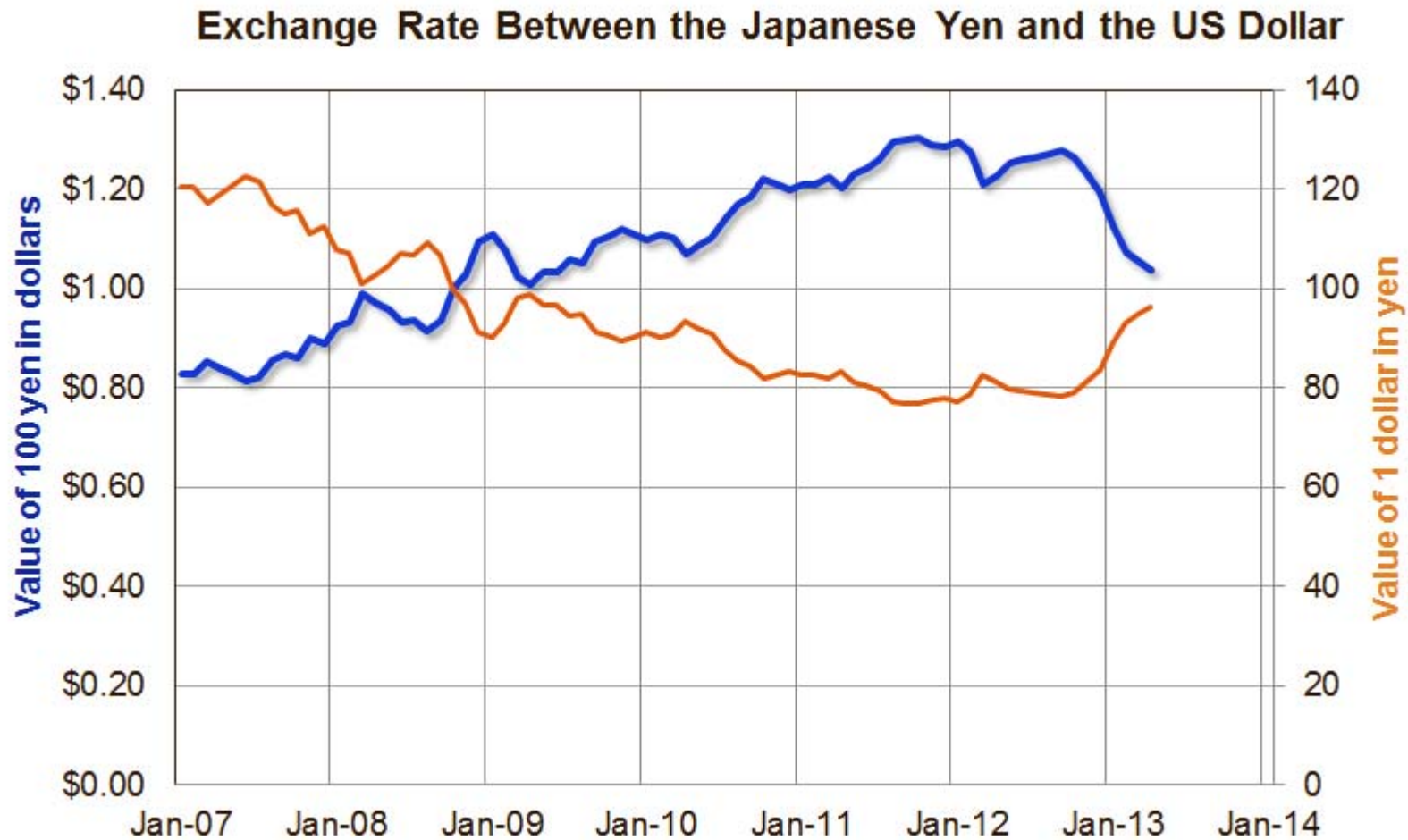
As always, the outlook for Alaska salmon markets in 2013 is uncertain and will be affected by many different factors which are difficult to predict:

- Alaska salmon harvests
- Other wild salmon harvests
 - Russian pink harvests
 - Japanese chum harvests
 - Both Russian and Japanese harvests affect roe markets
- Exchange rates for currencies of countries which are important markets for Alaska salmon
 - Japanese yen
 - Euro
- Farmed salmon market conditions:
 - Japanese farmed coho market
 - Affects Japanese market for Bristol Bay frozen sockeye
 - European and US farmed Atlantic markets
 - Affect markets for fillets, portions, & fresh salmon
 - Affect Chinese reproprocessors' demand for Alaska salmon
- Factors affecting Alaska processor costs
 - Harvest volumes
 - Visa rules for foreign workers

A lower statewide sockeye salmon harvest is projected.



Japanese demand will likely be affected by a recent sharp fall in the value of the yen—which reduces the what Japanese importers can afford to pay in dollars.



From a recent *Intrafish* article (February 4, 2013)



(Photo: Bent-Are Jensen)

Sockeye 'frenzy' hits United States

Alaska sockeye shortage sends up prices, opens up market to Russian salmon.

Last year's shorter-than-usual sockeye salmon season may be well in the past, but the effects are reverberating now. The rush of salmon that flooded fishermen's boats went into cans more than usual, and at this point that means a significant shortage in inventory of high-quality frozen Alaska sockeye.

"It seems like there's a frenzy on sockeye in the market right now," Kevin Bradley, director of Asia operations for Tradex, told *IntraFish*. "Everybody seems to be calling, looking for product."

Intrafish,
April 3, 2013



Turbulent season ahead for wild salmon processors

How are European processors going to cope with lower sockeye supply and higher prices?



Elisabeth Fischer

Published: 03 April 2013 01:23 PM Updated: 03 April 2013 02:35 PM

Associated Article

Sockeye prices shooting up

over listeria fears

The Alaska forecast for sockeye for the 2013 season tells the story of short supply, especially in Bristol Bay, where the number of fish is predicted to drop from 22 million to 16.6 million when the new season starts June 1.

"We went from 30 million fish to about 16 million fish within three years," said Canetti. "That's a huge drop -- there's just not enough product around."

The **unexpected Alaska sockeye shortage sent up prices last year**, and with a tightening demand prices are predicted to go further up.

Short-term outlook for Alaska sockeye salmon markets . . .

In general, as of April the market outlook for 2013 looks relatively favorable:

- Sockeye harvest volumes will probably be lower
- Canned salmon markets are strong and inventories are low
- Farmed salmon prices are strengthening

But . . .

- The value of the yen has been dropping rapidly . . .

Many factors can affect prices, and every year brings surprises!

- If you look, you can find reasons to be optimistic or concerned

Long-term outlook for Alaska salmon markets

There are many reasons for optimism about the future of Alaska wild salmon

- Global demand for salmon is likely to continue to grow:
 - Growing population
 - Growing incomes, particularly in rapidly developing countries such as China
 - Health benefits of salmon
 - New product forms appealing to a broader range of consumers
- Wild salmon are in limited supply
 - Potential for niche market differentiation
- Potential limits to future growth of farmed salmon production
 - Continuing potential for disease problems
 - Limits to fish oil and fish meal feed sources

Alaska wild salmon also faces potential future challenges

- Resource uncertainty
 - Regime shifts and climate change
- Potential for farmed salmon supply growth to exceed demand growth, glutting markets and depressing prices, as has happened in the past
- Potential for competition from non-salmon fish species as world aquaculture production grows
- World economic uncertainty
- Political uncertainty:
 - Sport-commercial allocations, hatcheries, Endangered Species Act, etc.

The Alaska salmon industry has seen dramatic changes
in every decade since statehood.

The future is likely to bring continued significant change!

ECONOMICS OF FISH COURSE

ACKNOWLEDGEMENT

Economics 211: The Economics of Fish

- A University of Alaska Anchorage online distance education course
- Taught by Gunnar Knapp
- Taught entirely online
- Self-paced: Enroll any time, begin any time, work at your own pace
- Intended for:
 - students majoring in fisheries programs
 - people working in jobs related to fish and the seafood industry
 - Anyone interested in fish and the seafood industry
- What it's about:
 - A broad overview of the global, American and Alaska seafood industries.
 - Key insights of economics about wild fisheries, aquaculture, fish processing, the seafood distribution chain, fish prices, fish marketing, economic impacts of the seafood industry, and important current fisheries and aquaculture policy issues
- For more information, contact Gunnar Knapp at Gunnar.Knapp@uaa.alaska.edu

Thank you to Icicle Seafoods, Inc.

- For \$1 million in donations to the University of Alaska over the past five years
- Which have supported programs at many UA campuses in many Alaska communities
- Including generous donations to the UAA Institute of Social and Economic Research (ISER), which have made it possible for me to continue to track seafood market trends

My research activities and conclusions are totally independent of Icicle.

DATA SOURCES

Summary of Data Sources . . .

Information	Data sources (described in the following slides)
Alaska salmon harvests	Alaska Department of Fish and Game Harvest Data
Alaska salmon production	ADF&G Commercial Operators Annual Reports (COAR) Data
Alaska salmon end-markets	ADF&G Commercial Operators Annual Reports (COAR) Data National Marine Fisheries Service (NMFS) Foreign Trade in Fisheries Products Data
Alaska salmon ex-vessel prices	Alaska Department of Fish and Game Harvest Data
Alaska salmon wholesale prices	ADF&G Commercial Operators Annual Reports (COAR) Data
Alaska salmon wholesale prices	Alaska Department of Revenue Salmon Price Reports Data
Alaska salmon ex-vessel value	Alaska Department of Fish and Game Harvest Data
Alaska salmon wholesale value	ADF&G Commercial Operators Annual Reports (COAR) Data
Earnings and permit prices, selected salmon fisheries	CFEC Basic Information Tables

(List continues on next page)

Summary of Data Sources (continued)

Information	Data sources (described in the following slides)
Japanese wholesale prices	www.fis.com data, converted to \$/lb using Federal Reserve Bank of St. Louis Exchange Rate Data
United States average import prices	National Marine Fisheries Service (NMFS) Foreign Trade in Fisheries Products Data
Norwegian wholesale prices	Statistics Norway Weekly Export Prices, converted to \$/lb using Federal Reserve Bank of St. Louis Exchange Rate Data
United States wholesale prices	Urner-Barry's Seafood Price Current
Exchange rates	Federal Reserve Bank of St. Louis Exchange Rate Data

Alaska Department of Fish and Game (ADF&G)
Salmon Harvest and Ex-Vessel Price Data

- Annual average Alaska salmon harvest and ex-vessel price data are posted at this Alaska Department of Fish and Game (ADF&G) Commercial Fisheries Division website:
<http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyfisherysalmon.salmoncatch>
- The data shown in this presentation for the years 1994-2012 are posted by individual years at the link named “Alaska Commercial Salmon Harvests & Exvessel Values, 1994-2012”
- Data for earlier years were provided by the Commercial Fisheries Entry Commission.
- Note that the price data posted by ADF&G (which were used to estimate value) are based on Commercial Operator Annual Reports (see the next slide in this appendix) for all years through 2011. Since these reports are not yet available for 2012, the price data for 2012 are preliminary ADF&G estimates. It is likely that they understate actual 2012 ex-vessel prices because they do not include post-season adjustments.

Alaska Department of Fish and Game (ADF&G)
Commercial Annual Operator Reports (COAR) Data

- The Commercial Operator Annual Reports (data) are compiled by ADF&G based on “Commercial Operator Annual Reports” which Alaska fish processors are required to submit to the Alaska Department of Fish and Game in April of every year. In these reports they are required to report the total volume of fish purchased, by species and area; the total amount paid for fish purchased, by species and area; the total volume (weight) of production, by product, species and area; and the total first wholesale value of production. Information about the COAR reporting forms is at <http://www.adfg.alaska.gov/index.cfm?adfg=fishlicense.coar>
- The COAR data are not posted on the internet or published regularly by ADF&G, but are available by special request from ADF&G.
- The data used to prepare these graphs were provided to me by ADF&G over a number of years.
- For the purposes of these graphs, I have grouped all production into five product categories: “canned,” “frozen,” “fresh,” “roe” and “other.”

Some important things to keep in mind in looking at the COAR data graphs:

- The data are statewide data. They group together production from all areas of the state, and thus conceal sometimes significant differences between areas in the mix of products produced from different species as well as the wholesale value of production. Thus year-to-year differences in the statewide mix of products produced or average prices may reflect in part changes in the relative share of production from different areas.
- The data are for aggregate product categories. Thus year to year changes for a product category may reflect changes in the relative mix of products within that category. For example, “canned salmon” includes both “talls” and “halves”. Halves usually sell for a higher average price per pound than talls. If the share of halves in total canned production increases, the average price per pound for all canned salmon production will increase—even if the prices for both talls and halves remains the same.
- The data are not necessarily 100% accurate. Errors may have crept in when processors reported the data, when ADF&G entered the data in their database, or when I analyzed the data. It is most useful to focus on long-term significant trends illustrated by the data, rather than any specific figure for any particular year.
- The data do not include production during the most recent (2012) salmon season, as these data will not be reported until April of 2013.

Alaska Department of Revenue Salmon Price Reports Wholesale Price Data

- Every four months, “large” Alaska salmon processors (those with sales exceeding 1 million pounds in the previous calendar year) are required to submit salmon price reports to the Alaska Department of Revenue. These reports are available at:
www.tax.alaska.gov/programs/programs/other/fish/salmonreports
- The reports include average wholesale prices (total value / total volume) reported by all “large” Alaska processors for the following four-month periods:
 - January-April (I)
 - May-August (II)
 - September-December (III)
- The graphs in this presentation show average wholesale prices since 2001 for the six major product forms for Alaska salmon

National Marine Fisheries Service (NMFS) Foreign Trade in Fisheries Products Data

- The National Marine Fisheries Service posts very detailed data online about U.S. exports and imports of fisheries products at:
<http://www.st.nmfs.noaa.gov/st1/trade/>
- The data presented in this presentation were calculated from the “Monthly Trade Data by Product, Country/Association”:
http://www.st.nmfs.noaa.gov/st1/trade/monthly_data/TradeDataCountryMonth.html

Commercial Fisheries Entry Commission (CFEC) Basic Information Tables

- The Commercial Fisheries Entry Commission (CFEC) posts “Basic Information Tables” for each Alaska salmon fishery on its website at: <http://www.cfec.state.ak.us/bit/MNUSALM.htm>
- These tables provide a useful summary of trends since 1975 in each salmon fishery for numbers of permits issued/renewed, numbers of permits fished, total pounds harvested, average pound harvested, gross earnings, average earnings, and average annual permit prices.
- The most recent data currently available are for 2011.

www.fis.com

- The seafood industry trade information website www.fis.com posts wholesale price information for many different species of fish at many different markets around the world. These data are proprietary: you need to subscribe to the website in order to access them.
- The Japanese wholesale prices shown in the graphs in this presentation are the Tokyo market wholesale prices reported for frozen Alaska sockeye salmon (Bristol Bay), frozen Chilean coho salmon, and frozen Chilean trout (all prices are for 4-6 lb frozen H&G) as of the first day of each month.
- To convert from prices in yen/kilo to prices in \$/lb, use the following formula:
$$\text{Price in \$/lb} = [(\text{Price in yen/kilo}) / (\text{exchange rate in yen/dollar})] / [2.2046 (\text{kilo/lb})]$$

Statistics Norway Weekly Export Prices

- The Norwegian Statistical Agency, Statistics Norway, posts weekly average export prices for fresh whole Atlantic salmon at:
<http://www.ssb.no/en/laks/>
- The posted wholesale prices are in NOK/kilo. They may be converted to \$/lb using Federal Reserve Bank of St. Louis exchange rate for the Norwegian currency (NOK), using the following formula:

$$\text{Price in \$/lb} = [(\text{Price in NOK/kilo}) / (\text{exchange rate in NOK/dollar})] \\ / [2.2046 (\text{kilo/lb})]$$

Urner Barry's Seafood Price Current

The image shows the front cover of the 'seafood PRICE CURRENT' newsletter. The title is prominently displayed at the top in a bold, sans-serif font. Below the title, there is a grid of various seafood products and their corresponding prices, organized into columns. The layout is typical of a market price sheet, with small text providing additional details about the products and the publication's contact information.

- Urner Barry's *Seafood Price Current* is an eight-page industry newsletter published twice each week which provides US wholesale price data for a wide variety of seafood products. These data are proprietary: you need to subscribe to the newsletter to get them. Information about how to subscribe to the newsletter or online market prices is at www.urnerbarry.com (telephone 732-240-5330).

Federal Reserve Bank of St. Louis Exchange Rate Data

- The Federal Reserve Bank of St. Louis posts detailed monthly and daily exchange rates between the United States dollar and other major currencies at <http://research.stlouisfed.org/fred2/categories/15>